



31 Segovia, San Clemente, CA 92672  
(949) 369-3867 • TECemail@aol.com

This file can be found on the TEC website at  
<http://www.tecweb.org/evalrpt/pbs/mathweb00.pdf>  
© TEC, 2000

## **MathWeb 2000**

### **Evaluation Report**

**January 31, 2001**

**Carla Lane, Ed.D.**  
Principal Evaluator

# PBS MathWeb 2000 Evaluation

## Table of Contents

<b>MathWeb 2000</b>	1
Facilitator Training	5
Participant Training	6
Cost Models	6
Communities of Learners	7
Research Questions	7
Review of Literature	8
The e-conference Model	14
Interaction	20
Interaction Analysis Techniques	32
The Adult Learning Model	35
Basic Interaction Analysis Categories	36
Validity	36
Reliability	37
Methodology	38
Findings	38
Recommendations	53
<b>Analysis of MathWeb 2000 Online Surveys</b>	56
Methodology	56
Educators' States	58
Grades Taught by Responding Educators	59
Subjects Taught by Responding Educators	60
Years Taught by Responding Educators	60
MathWeb 2000 Met Content and Learning Needs	61
Content Level Appropriateness	63
What Other Content or Information Would Be Useful?	64
Amount of Interaction Between Respondents and Lecturers	66
Interaction Levels Between Respondents and Workshop Moderators	68
Interaction Levels Between Respondents and Conference Moderators/Directors	70
Overall Level of Interaction	72
Respondent's Level of Participation as Compared to Face-to-Face Conferences	74
What Would Encourage More In-depth Interaction and Learning?	76
Three Weeks is a Good Time Length for MathWeb 2000?	80
Ability to Easily Find Conference Instructions, Sessions, and Workshops	82
Ability to Download, Upload and Save Wanted Material	84
MathWeb 2000 is Meeting Expectations	86
Time Spent Online and Offline for MathWeb 2000	88
Length of Time to Develop Comfort Level with Web Environment	89
Respondents Computer Systems	89
Computer Model Used by Respondents	90
Internet Connections	92
What Else Can MathWeb 2000 Planners Do to Make the Conference a Worthwhile Experience for Respondents	94
What is Positive and/or Negative About MathWeb 2000	99
Plans for MathWeb 2001 that Differ from MathWeb 2000	106

Respondents Decision to Continue Participating the Next Week of MathWeb	110
Mathematics Conferences Attended Each Year	110
Date of Attendance at Last Math Conference	111
Other Education Conferences Attended Each Year	112
How Respondents Learned About MathWeb 2000	113
Differences Perceived by Respondents Between Weeks One and Two	114
<b>Appendices</b>	
<b>Appendix A:</b>	117
Survey Instrument #1	118
Survey Instrument #2	120
<b>Appendix B:</b>	122
MathWeb 2000 Documents Interaction Coding	123
Welcome Center, Arrival Harbor	123
Sponsors and Exhibitors	129
Welcome Center, Arrival Harbor	133
Main House Home	141
Workshop 1	288
Workshop 2	331
Workshop 3	385
Workshop 4	408
Workshop 5	426
Greenroom	436
Resort Fun	449
Poolside Café	451
<b>Appendix C:</b>	559
References	560

## PBS MathWeb 2000 Evaluation

### List of Tables

Table 1	Conference Interaction Model (Lane 2001)	15
Table 2	Interaction Counts by All Codes (with code definitions)	39
Table 3	Interaction Counts by All Codes (without code definitions)	44
Table 4	Interaction Coding by Conference Segment	46
Table 5	Interaction Counts by Conference Segment	53
Table 6	Educators' States: First and Second Week Survey	58
Table 7	Educator's Teaching grade Span: First and Second Week Survey	59
Table 8	Subjects Taught: First and Second Week Survey	60
Table 9	Educators' Years Taught: First and Second Week Survey	61
Table 10	Met Content/Learning Needs: First Week Survey	62
Table 11	Met Content/Learning Needs: Second Week Survey	62
Table 12	Met Content/Learning Needs? First and Second Week Survey Comparison	62
Table 13	Content Level Appropriateness: First Week Survey	63
Table 14	Content Level Appropriateness: Second Week Survey	63
Table 15	Content Level Appropriateness: First and Second Week Survey Comparison	64
Table 16	What Other Content or Information Would Be Useful? First and Second Week Surveys	64
Table 17	What Other Content or Information Would Be Useful? Response Group Summaries	66
Table 18	Interaction Levels Between Respondents and Lecturers: First Week Survey	67
Table 19	Interaction Levels Between Respondents and Lecturers: Second Week Survey	67
Table 20	Interaction Levels Between Respondents and Lecturers: First and Second Week Survey Comparison	68
Table 21	Interaction Levels Between Respondents and Workshop Moderators: First Week Survey	69
Table 22	Interaction Levels Between Respondents and workshop Moderators: Second Week Survey	69
Table 23	Interaction Levels Between Respondents and Workshop Moderators: First and Second Week Survey Comparison:	69
Table 24	Interaction Levels Between Respondents and Conference Moderators/Directors: First Week Survey	71
Table 25	Interaction Levels Between Respondents and Conference Moderators/Directors: Second Week Survey	71
Table 26	Interaction Levels Between Respondents and Conference Moderators/Directors: First and Second Week Survey Comparison	71
Table 27	Overall Level of Interaction: First Week Survey	73
Table 28	Overall Level of Interaction: Second Week Survey	73
Table 29	Overall level of Interaction: First and Second Week Survey Comparison	73
Table 30	Respondent's Level of Participation as Compared to Face-to-Face Conferences: First Week Survey	75
Table 31	Respondent's Level of Participation as Compared to Face-to-Face	

		Conferences: Second Week Survey	75
Table	32	Respondent's Level of Participation as Compared to Face-to-Face Conferences: First and Second Week Survey Comparison	75
Table	33	What Would Encourage More In-depth Interaction and Learning? First and Second Week Survey Response	77
Table	34	What Would Encourage More In-depth Interaction and Learning? Response Group Summary Survey Question	79
Table	35	Three Weeks is a Good Time Length for MathWeb 2000? First Week Survey	81
Table	36	Three Weeks is a Good Time Length for MathWeb 2000? Second Week Survey	81
Table	37	Three Weeks is a Good Time Length for MathWeb 2000? First and Second Week Survey Comparison	81
Table	38	Ability to Easily Find Conference Instructions, Sessions, and Workshops: First Week Survey	83
Table	39	Ability to Easily Find Conference Instructions, Sessions, and Workshops: Second Week Survey	83
Table	40	Ability to Easily Find Conference Instructions, Sessions, and Workshops: First and Second Week Survey Comparison	83
Table	41	Ability to Download, Upload and Save Wanted Material: First Week Survey	85
Table	42	Ability to Download, Upload and Save Wanted Material: Second Week Survey	85
Table	43	Ability to Download, Upload and Save Wanted Material: First and Second Week Survey Comparison	85
Table	44	MathWeb 2000 is Meeting Expectations: First Week Survey	87
Table	45	MathWeb 2000 Is Meeting Expectations: Second Week Survey	87
Table	46	MathWeb 2000 Is Meeting Expectations: First and Second Week Survey Comparison	87
Table	47	Computer Models Used by Respondents: First and Second Week Survey Responses	91
Table	48	Internet Connections: First and Second Week Survey Responses	93
Table	49	What Else Can MathWeb 2000 Planners Do to Make the Conference A Worthwhile Experience for Respondents: First and Second Week Survey Response	95
Table	50	What Else Can MathWeb 2000 Planners Do to Make the Conference A Worthwhile Experience for Respondents: Response Group Summary Survey Question	98
Table	51	What Is Positive and/or Negative About MathWeb 2000: First and Second Week Survey Response	100
Table	52	What Is Positive and/or Negative About MathWeb 2000: Response Group Summary	105
Table	53	Plans for MathWeb 2001 that Differ from MathWeb 2000: First and Second Week Survey Response	107
Table	54	Plans for MathWeb 2001 that Differ from MathWeb 2000: Response Group Summary	109
Table	55	Mathematics Conferences Attended Each Year: Summary of Response	110
Table	56	Date of Attendance at Last Math Conference Summary of Responses	111
Table	57	Other Education Conferences Attended Each Year: Summary of	

	Responses	112
Table 58	How Respondents Learned About MathWeb 2000: Summary of Responses	113
Table 59	Differences Perceived by Respondents Between Weeks One and Two: Second Week Response	115
Table 60	Differences Perceived by Respondents Between Weeks One and Two: Response Group Summary	116
Table 61	Welcome Center, Arrival Harbor, Item 1	123
Table 62	Welcome Center, Arrival Harbor, Item 1	123
Table 63	Welcome Center, Arrival Harbor, Item 2	124
Table 64	Welcome Center, Arrival Harbor, Item 3	125
Table 65	Welcome Center, Arrival Harbor, Item 4	126
Table 66	Welcome Center, Arrival Harbor, Item 5	128
Table 67	Welcome Center, Arrival Harbor, Item 6, Help Desk	129
Table 68	Welcome Center, Arrival Harbor, Item 7, LIVE CHAT	135
Table 69	Sponsors And Exhibitors, Item 2	136
Table 70	Sponsors And Exhibitors, Item 4	138
Table 71	Main House Home, Opening Keynote	141
Table 72	Main House Home, Item 1, PBS MW Open Keynote	142
Table 73	Main House Closing Keynote Item 2	163
Table 74	Main House Home, Item 3 Panel 1: Those Dreaded Tests Kids HAVE TO Take	172
Table 75	Main House Home, Item 4, Classroom Assessment: Issues of Prof Development	212
Table 76	Main House Home, Item 5, Classroom Assessment from the Inside	248
Table 77	Main House Home, Item 8, Alternative forms of Assessment	270
Table 78	Main House Home, Item 9, MW Survey Results	278
Table 79	Workshop 1 Item 1, School-wide Objectives	288
Table 80	Workshop 1 Item 2, MW 2000 Center, Introduction	290
Table 81	Workshop 1 Item 3, Alignment of Curriculum, Assessment and Instruction	298
Table 82	Workshop 1 Item 4, Teacher Talk Orientation Lecturing	315
Table 83	Workshop 1 Item 5, Teacher Talk Gives or Asks for Resources	326
Table 84	Workshop 1 Item 6, Teacher Talk Praises or Encourage	329
Table 85	Workshop 2, Item 1, Practical Ideas for Performance Tasks	331
Table 86	Workshop 2, Item 2, Introduction, What are Performance Activities?	333
Table 87	Workshop 2, Item 3, Then and Now	334
Table 87	Workshop 2, Item 4, Creating High Quality Performance Tasks	349
Table 89	Workshop 2, Item 5 Scoring Tasks	358
Table 90	Workshop w, Item 6, Exemplar Tasks for Exploration and Use	369
Table 91	Workshop 2, Item 3, Practical Ideas for Creating and Using Performance Tasks	378
Table 92	Workshop 3, Item 1, MathWeb 2000 Center, Open Ended Response	385
Table 93	Workshop 3, Item 2, MathWeb 2000 Center, Response 1	386
Table 94	Workshop 3, Item 3, MathWeb 2000 Center, Similarities and Differences	388
Table 95	Workshop 3, Item 4, Factors to Consider	392
Table 96	Workshop 3, Item 5, Response 3, Samples	395
Table 97	Workshop 3, Item 6, Response 10, Assessment	397
Table 98	Workshop 3, Item 7, Response 20 What Do You Think?	401

Table 99	Workshop 4, Item 1, Aligning Classroom Assessments to Standards	408
Table 100	Workshop 4, Item 2, Response 2 Introduction	410
Table 101	Workshop 4, Item 3, Response 14, Activity 1	412
Table 102	Workshop 4, Item 4, Activity 2	418
Table 103	Workshop 4, Item 5, Gives Directions	421
Table 104	Workshop 4, Item 6, Teacher Talk asks Evaluative Questions	422
Table 105	Workshop 4, Item 7, Activity e Retracing Our Steps	424
Table 106	Workshop 5, Item 1, Technology & Assessment	426
Table 107	Workshop 5, Item 2 Introduction, Factual Lecturing	427
Table 108	Workshop 5, Item 3, Discussion 1	429
Table 109	Greenroom, Item 4, Marketing	436
Table 110	Greenroom, Item 5, Registration and Payments	438
Table 111	Greenroom, Item 6, Keep Me Informed	438
Table 112	Greenroom, Item 7, Education in the News	440
Table 113	Greenroom, Item 8, Power Point Test	448
Table 114	Greenroom, Item 9, Test Power Point	448
Table 115	Greenroom, Item 10, Welcome	448
Table 116	Resort Fun, PBS MW	449
Table 117	Poolside Café, Item 1, Welcome	451
Table 118	Poolside Café, Item 2, Introduce Yourself	452
Table 119	Poolside Café, Item 3, Math in the News	488
Table 120	Poolside Café, Item 4, Question of the Day	505
Table 121	Poolside Café, Item 5, Recommended Article	511
Table 122	Poolside Café, Item 6, What's on your Mind?	521
Table 123	Poolside Café, Item 7, Teacher Initiated Discussion w/ Student	541
Table 124	Poolside Café, Item 8, Education Stories	544
Table 125	Poolside Café, Item 9, Educational Quotes	545
Table 126	Poolside Café, Item 10, Online Improv	547
Table 127	Poolside Café, Item 11, PBS Program	553
Table 128	Poolside Café, Item 13, Certificate of Attendance	555
Table 129	Poolside Café, Item 14, Parting Comments	556

**MathWeb 2000**  
**Evaluation Report**  
**January 31, 2001**

**Carla Lane, Ed. D.**  
**Principal Evaluator**  
**The Education Coalition**

**MathWeb 2000**

MathWeb 2000 was a three week online conference for mathematics teachers. Approximately 400 teachers registered for the conference. Potential participants received information about the conference through a variety of methods including notification by NCTM and PBS. Approximately 400 participants registered for the conference and paid a small fee to cover the cost of preparing and mailing a CD-ROM of the conference. A group of mathematics experts facilitated the sessions.

The conference was sponsored by a group of organizations to test the concept of offering an online mathematics seminar because many teachers who are required to teach mathematics are unable to attend mathematics conferences. Their districts are unable to pay for their travel, registration, and substitute teacher expenses. Many teachers are unable to attend mathematics conferences because of their family situation such as caring for children or elderly family members. While districts provide professional development for teachers who teach mathematics, they have not been able to fill all the needs.

Educational reform has increased the need for teachers to have a higher degree of knowledge about mathematics and how to teach it. Many teachers have learned that they do not have the background or the depth of understanding required by the new

approaches to mathematics. In many cases, the teachers are the product of traditional mathematics instruction program while they were in high school and college. The traditional programs emphasized rote memorization over problem solving and understanding. As a result, many teachers who are required to teach mathematics are poorly equipped to move past their own education and change their teaching instructional strategies.

Additionally, a small percentage of teachers were specifically educated to teach mathematics. A report to the Carnegie Corporation (1999) states, “almost three-quarters of elementary school teachers...major only in education.” Teachers who possess little more than a high school education in mathematics and introductory college Algebra may be responsible for mathematics at their school. In rural districts this would be common. Many rural and small districts are unable to hire a qualified and credential mathematic specialist.

Despite the recent years where mathematics has become an educational priority, many teachers still have not gained enough skill in the new instructional methods, many teachers are question their grasp of mathematics. They are unsure of how to improve their understanding of mathematics. While many are willing to continue their education, they have limited resources to put toward their professional development and their districts are unable to provide the funds to meet these exceptional needs. E-conferencing provides a promising solution to meet these needs.

The conference was divided into a number of components, which included a welcome center, lectures, workshops, conversations, a networking area, and a greenroom for facilitators.

## Conference Components

The online conference was set up as a metaphor of a conference held at an island resort. A drawing of the island showed buildings with the following names and purposes.

Arrival Harbor – Welcome Center: Greeting area for participants

Sponsors and Exhibitors: Area to discuss sponsors products

Main House: area for keynotes, panels, conversations, and workshops

Poolside Café: Area for introduction, math news, daily questions, recommended articles, participant networking, education stories/quotes and other components.

Greenroom: Area for facilitators to test materials, ask questions and work with conference administrators.

## Conference Online Tools

The online conference used a software program that was accessible by an Internet browser. Participants using PC or Macintosh platforms could access the conference Web site without special software.

Facilitators were able to post materials to the conference sessions that they hosted. Participants were able to send messages to each session to ask questions, share information and carry on discussions with facilitators or participants. Facilitators and participants could also exchange private e-mail.

Photographs, drawings, tables and other graphic materials were included in the facilitators' materials. Audio, video and simulations were not included in this conference.

A separate software program was used to provide a live (synchronous) chat for about two hours.

As participants logged on and read messages, the software tracked what they had viewed. The next time they logged on, it showed the participant only the new messages.

The conference is open 24 hours a day, seven days a week. Participants have the flexibility to schedule their learning time around their professional and personal commitments.

Participants could attend all aspects of the conference. This was a major advantage over face-to-face conferences where sessions run concurrently and attendees must make a decision about which session to attend.

Computer e-conferencing represents a new domain for educational interaction and it is essentially collaborative and team based. Shared experiences and sharing experiences are enabled by the software, computer, and Internet.

Assignments could be made and worked on by individuals or groups.

Facilitators are able to provide significant one-to-one information to participants when they need it or within a few hours of when a question is asked. The amount of time available to participants is increased because it is not confined to the traditional one hour session at a conference. Contact is ongoing as the group does not leave. Sessions can last a day, week, or a month.

Participants react to one another's discussions by critiquing the work, making additional suggestions, providing other information, or asking for additional information. The process contributes to higher developmental levels of understanding and their collaborative work skills are honed by the requirements of the conference.

The acts of formulating and verbalizing one's own ideas as well as responding to ideas by others are important cognitive skills. Collaboration contributes to higher order learning through cognitive restructuring or conflict resolution. Whereas in the face-to-face

classroom environment, up to 60-80 percent of the verbal exchange during class time comes from the teacher (Dunkin & Biddle, 1974; McDonald & Elias, 1976). This pattern is the opposite in computer conferencing (Lane, 1990)

Analyses of various online courses indicate that the instructor contributes 10-15 percent of the message volume and the number of conference messages (Harasim, 1987; Winkelmann, 1988). This is not a correspondence course by modem; interaction in this medium is significantly higher than in traditional conferences or classes.

The availability of an archived transcript of the conference facilitates a reflective review of the previous comments and discussion.

As a medium, it is particularly conducive to brainstorming, networking, group synergy, and sharing information. It is an information rich environment that can meet multiple intelligences and learning styles.

### **Facilitator Training**

Facilitators need to be trained and assisted in producing materials for online e-conferences. Producing video, audio, text and other materials requires a new and different set of skills than those possessed by most facilitators or experts who might deliver sessions on an e-conference. Facilitators need to receive training in how to facilitate online e-conferences. They need to understand how to promote interaction and create an environment that enables collaboration. Additionally, they need information in adult education theory and application so that participants are encouraged to become self-directed and take responsibility for initiating interaction.

## **Participant Training**

Participants need to learn how to work effectively in an e-conferencing environment. They need to receive information about how to interact, how to participate, how to collaborate, and how to become self-directed in the environment so that they get the most from the time they spend at the conference. This need can be fulfilled by explanations of what constitutes effective interaction and examples of effective interaction.

As teachers participate in more e-conferences and develop more computer skills, this will become another skill for them. It will also become useful as teachers increasingly are required to use computers for their daily work.

## **Cost Models**

There is a perception that distance learning can reduce the cost of teaching and learning. The model of e-conferencing will definitely reduce the cost for teachers to attend a conference. Profit making cost models to create and run a conference need to be created. New methods to make it financially feasible to support an e-conference need to be created. Face-to-face conferences create income through selling registrations, selling exhibit space, and selling advertising space in printed programs. They create additional income or reduce expenses through arrangements with hotels for complimentary rooms based on rooms sold, meals sold so that banquet rooms can be booked, and exhibit space sold after renting large rooms or convention center areas.

Many conferences provide a lucrative income for conference promoters. As a result, they tend not to want to change the face-to-face conference model and offer online e-conferences.

However, a number of return on investment models have been created for educational classes. The success of distance learning courses is clearly leading the way to on-line e-conferencing.

### **Communities of Learners**

A great deal of material is found in the literature about the benefits of developing communities of learners. Research over the years has emphasized the social nature of learning and that people learn best when interaction is enabled and they are able to participate as full members of a community. Membership in the community enables participants to transcend the interaction with the content to a point where they are able to contribute information and thus share it with other community members.

This enables the dissemination of new practice, unites the participants, and establishes trust. As community members experiment with new approaches and ideas, they integrate them into their knowledge base. The climate of collaboration contributes to an acceptance of new ideas and learning. It allows a place where a risk can be taken and is supported. Being a member of a community of learners is something that can traditionally occur in a face-to-face class or face-to-face conference because of the temporary nature of a class or conference. However, if supported correctly after the conference, the community that focuses on a common interest may endure and build a stronger learning community.

### **Research Questions**

A variety of research questions were posed about the conference.

Does group computer conferencing provide a useful and economical method of interaction for mathematics instructors to continue their professional development?

Did the ability to go to all aspects of the conference, or to choose the sessions that were of individual interest have a higher impact on learning; was it overwhelming and contributing to an information glut for participants?

Does an online conference meet the needs of the adult education methods of learning?

Does an online conference meet the multiple intelligences and learning styles of a varied group of participants?

What types of interaction took place and what was the impact of the interaction?

Does the asynchronous mode meet learning needs?

Is an online conference an economical replacement for attending national, state, or local mathematics conferences that continue professional development for mathematics teachers?

What were the reactions of the participants after the first and second week of the MathWeb 2000 computer conference.

What learning impact, if any, can be observed in participants?

What are the components of a model that would best meet the requirements of this audience?

### **Review of the Literature**

The Nature of Interactivity: One of the unique characteristics of many new media is their greater interactivity compared to the conventional mass media. This greater interactivity in mediated human communication provides an appropriate setting for development and testing theories of involvement.

“Involvement” is defined and operationalized in many ways. Broadly it refers to the degree to which an individual actively participates in an information-exchange process.

Involvement may be psychological through perceptual and cognitive processes that are either involuntary, such as seeing visual images from an interactive videodisc, or voluntary, such as interpreting the meaning of these images to decide which frame to select next. Involvement also can be social so that one involved with other individuals by interacting with them, perhaps through a communication medium such as computer conferencing and live chats. These two levels (psychological and social) may interact, as in computer conferencing where the relationships among group members may set norms that influence what kinds of messages are read and what kinds are ignored.

How is interactivity in the new media - due to the form of messages or characteristics of the media - associated with psychological or social involvement? This question is not new: McLuhan (1964) categorized media as “hot” or “cool” depending on their level of ambiguity or the degree of information processing that they required from the user. Krugman (1965) suggested that the extent to which an individual made connections (a conscious bridging of the medium’s message with one’s experiences or personal references) is greatly influenced by characteristics of the medium. Both McLuhan and Krugman felt that television, for example, is a “cool” medium because it does not generally require much involvement by the viewer. This low involvement is one explanation for the susceptibility of television audiences to entertaining, repetitive messages about low-salience products and issues. (Williams, et al., 1988, p. 169).

Another issue is whether interaction is necessary for learning to take place. A secondary issue to that question is whether interaction must take place in real time, or whether it is equally effective in an asynchronous mode. Guaranteeing sufficient interaction is a key concern of distance educators who use techniques such as e-mail, telephone office hours, and peer interaction to provide an opportunity for dialogue with learners.

One study (Stone, 1991), and others show student determination and course difficulty, not degree of interaction, to be the strongest predictor of distance learners success. Stone's study surveyed over 8,400 graduate-level engineering students enrolled at eight universities belonging to the National Technological University (NTU) and its parent organization, the Association for Media-based Continuing Education for Engineers (AMCEE). The results of the study found that engineering students learning by satellite performed at least as well academically as demographically similar students taking the same courses by conventional classroom methods. Over 300 previous studies have reached the same conclusion. However, the research also showed that students, especially older ones, who watched videotapes of the satellite broadcasts performed better than those who watched the broadcasts live. This suggests that for the older, working adult, flexibility in the time of learning may be more important for learner performance than the ability to talk back directly to live instructors.

While interaction has become significant, it may not be the most significant contributing factor to all students' learning. Learning styles are varied. What works well for one student may not be effective for all students. In the past when distance learning was just beginning, early developers attempted to replicate the classroom environment as closely as possible. As the research continues to grow in favor of learning styles, self-directed learning and, asynchronous interaction, we find that there are many types of content that don't require two way audio and video for learning to take place.

The heavy emphasis of past communication scholars on investigating the effects of the newest medium has come at a cost in terms of what was not studied. While the computer has received wide spread attention as a delivery mechanism for online courses, as an enhancement to other mediated learning, as well as face-to-face traditional classes, it has not received support as a method to deliver conferences.

There are many reasons for the non-use of computers for seminars and conferences and locally promoted professional development. Every educational organization has not fully adopted technology or mediated learning. The digital divide is currently well documented and there are still many areas of the US that do not have fast connections for Internet access. While some school districts in rural areas may have fast connections, home access may still be non-existent or through a 28k or 56k modem. Because rural communities are less likely to have an Internet service provider (ISP), telephone access is usually to a distant town and the telephone charges may be at the toll or long distance level.

A prime reason for the lack of a fully developed online conference program by many organization is that the organizations have not been able to develop return on investment budgets that provide a reasonable profit or in many cases even a break even financial scenario. Commercial and association groups normally sell booth space for exhibits, advertising in conference literature and use these revenue streams to cover the cost of providing the conference content. The financial model that provides income to the conference provider as well as a significantly reduced rate for attendance and associated costs for the participant provide the basis for a new model.

Interestingly, the telephone has been almost totally ignored by communications scholars (Williams, et al., 1988, p. 24). Past study of the telephone was shortchanged because the telephone was widely diffused among U.S. households before communication research escalated around 1950. The study of the telephone's diffusion and impact was made more difficult after the point at which almost all U.S. households had phones.

Professional development of mathematics teachers has largely been seen as belonging to the realm of the district, which employs the teachers. If professional

development was to be provided, it was done on the days set aside by the state or district to provide professional development. These days have dwindled and range from two to four days per district and state. This reduction in professional development days is seen throughout the country.

A number of states have recognized that the lack of professional development days presents a problem for the ongoing professional development of the teaching staff. Many state departments of education now sponsor a two or three day mathematics conference for their teachers. Others have devoted the time and funds to technology professional development;

Unfortunately, not every mathematics teacher can attend the state conference. There are a variety of reasons. These may be personal in that teachers who are parents cannot get and/or pay for appropriate child-care. Districts may have contracted for other mathematics or content area professional development that used the available funds. Districts which can fund attendance usually cannot fund the attendance of every teacher who teaches mathematics. In most districts, K-5/6 teachers are responsible for all subject areas. Attendance at any conference means substitute teachers must be hired for all of the teachers attending the conference. Costs to attend a state mathematics conference include travel (usually by car but in some cases a flight), lodging, per diem and conference fees. Teachers who live close to the conference city may be able to drive in each day. However, this saving is usually lost the next year when the conference is moved to another city.

Attendance at national mathematics conferences are even more limited and for the same reasons. Conferences are usually held in larger cities where lodging and food costs may be higher, airplane travel is usually required at a higher cost than driving, and

the conference fees are usually higher. Travel may require that teachers be gone longer and substitute teachers have to be hired and paid for a longer period of time

Conference organizers have not approached the idea of online computer conferencing as a way to deliver content. This is due to a number of factors. They are usually conference organizers, exhibit sellers, and promoters of conferences. Their expertise is not in building online conferences. They have not been able to define a model that is financially successful for them and provides a significantly reduced cost for the online participant.

Conference organizers have attempted some programs where a limited portion of the conference is broadcast or streamed across the Internet. If the conference is broadcast, cablecast or satellite broadcast locally or nationally, this adds another level of expense to the program. Production crews must be hired with mobile production studios and additional media must be purchased to broadcast the event. Usually, only keynote addresses are broadcast. Every hour of broadcast increases the cost for satellites or another medium. A very low level of estimate of the cost to broadcast one hour of keynote addresses is \$10,000. Usually, there is no cost to receive the program but the viewer must have access to the receive equipment which might include a satellite downlink, special cable channels, or in some cases just broadcast television.

A number of models have included an attempt to sell national satellite conferences where the satellite portion may last several hours and may be “sandwiched” with local content before and after the satellite portion. Usually, this requires that the satellite receive groups be in local receive rooms and there is a cost associated with attending the event. All of the problems associated with attending a face-to-face conference may be met with this model. Costs for travel, lodging, and substitute teachers may still be incurred.

Conference organizers have also attempted to video stream keynote addresses to audiences. This has become a more successful model as the software, technology and broadband access has improved. Most conference organizers have limited the streaming because the cost of streaming an entire conference is still prohibitive. As a result, the breakout sessions where teachers might find the most to meet their needs are still not available to them.

Conference organizers have made materials available online or in conference proceedings collections, but this is also dependent on the speaker providing and releasing the material. Many conferences provide audiotaping of sessions and then allow the vendor to sell the tapes. For most conferences, the entire collection of tapes runs about \$400. Individual session tapes usually carry \$8-\$10 costs. Depending on the topic, audiotapes may or may not provide a good delivery method.

To date, most conference organizers have provided limited ways for mathematics teachers to attend conferences. To our knowledge MathWeb 2000 is the only conference that has been delivered entirely online and experimented with an online chat session.

### **The e-conference Model**

The model is very strong for an online conference that would meet the needs of mathematics teachers across the country as validated by this three week pilot program. Problems that were encountered can be easily corrected. The corrections are embodied in the model (see Table 1).

**Table 1: Conference Interaction Model (Lane 2001)**

<b>Component</b>	<b>Conference Developer</b>	<b>Conference Facilitator</b>	<b>Conference Participant</b>
Conference Cost	Garner funding, set lowest reasonable fee to cover all expenses	May require honorarium	
Conference Length	1 1/2 week for every day at a face-to-face conference; 3 day conference = 4.5 weeks. Longer conference allows processing time for participants which aligns with the adult learning model. Use weekends	Set aside facilitation and interaction time; one week online conference = 2 hours per day – 14 hrs per week	Set aside interaction time; One week online conference = 1.5 hour per day = 10.5 hrs per week
Conference Notification and Marketing	One year prior. 3 month follow-ups and ability to register. e-mail about start day prior to and day of conference	One year prior 3 month follow-ups	One year prior 3 month follow-ups
Conference Sessions	Plan sessions and work with facilitators to help learners achieve goals. Use content standards where available to define goals and sessions	Begin session planning upon acceptance. Use standards to develop session and move participants toward achievable professional goals	
Software for learning environment	Provide software, training, ongoing support 24/7 for developers, facilitators, participants. Provide materials and examples of good interaction and collaboration	Develop skill in using software and interactive/collaborative environment before writing outlines and developing content	Prior to conference, log on, experiment with software. Read materials on interaction and collaboration
Facilitators	Schedule facilitators and sessions. Breakouts for grade bands.	Provide outline of session, media used, breakout sessions for grade bands.	
Professional Instructional Designers and Media Developers	Review outlines with facilitators, plan media, activities, interaction, development of learning community. Support facilitators, provide training, develop content	Works with professional developers to develop content	

**Table 1: Conference Interaction Model (Lane 2001) (continued)**

Component	Conference Developer	Conference Facilitator	Conference Participant
Learner Centered Delivery	Review learner centered delivery with facilitators. Provide materials and examples of good learner centered delivery and response, how to move from passive to active learning.	Reviews and works toward learner centered delivery as a role model for learners. Strives for active, exploratory, inquiry-based learning. Acts as role model.	Prior to conference, reads materials on learner centered delivery, self-direction, moving from passive to active learning
Adult Learning Theory is Basis of Conference	Adult learning theory is based on adults accepting and wanting responsibility, orienting toward the future, valuing initiative, opening to opportunities, solving problems, being creative. Provides information and structure for adult learning. Monitors conference and provides feedback to facilitator	Facilitator sets the climate for learning, establishes a structure for mutual planning, diagnoses learning needs, formulates directions for learning, designs and manages a pattern of learning experiences, and evaluates results. Acts as role model	Prior to conference, reads materials on adult learning theory, strives to understand where they can improve self-directedness, movement to active and independent learning.
Content delivery meets multiple intelligences and learning styles of learners; multipath progression	Use methods to reach all MI/LS. Understand learning needs of all learners. Provide MI/LS assessments	Use methods, content, activities to reach all MI/LS Understand learning needs of all learners and personal delivery preferences	Understand personal MI/LS and how to best meet them and ask for help to meet specific needs
Participant Release Time	Work with districts whose to get release time from duties by attendees which can be covered by others without hiring a substitute - playground duty, lunch duty,		

**Table 1: Conference Interaction Model (Lane 2001) (continued)**

Component	Conference Developer	Conference Facilitator	Conference Participant
Define and Train in Interaction and Collaboration	Predicated on responsiveness and distinctions between interactive, quasi-interactive (reactive), and non-interactive communication. Quasi- and interactive require that sender and receiver roles be interchangeable with each subsequent message. Learners interact with content, instructors and other learners. Provide and insist on interaction and structure. Provides materials to facilitators and learners about interaction and how it is effectively done to get the most from the conference. Monitor conference and provide feedback for improvement.	Reads materials on interaction. Understands definitions, how to evoke each, and how to interact in each mode comfortably. How t structure collaborative activities. Structure conference to meet all interaction needs. Provides extensive interaction to learners. Acts as a role model.	Reads materials provided on interaction and collaboration. Understands definitions. Attempts interaction and collaboration. Asks for feedback on how to improve. Learns how to interact and collaborate with a high comfort level
Collaborative Learning	Trains facilitators and reviews their work in developing a session that fully utilizes collaborative learning. Trains facilitators and learners in how to be a part of a collaborative learning group.	Develops learning activities that are carried out using peer interaction, evaluation, and/or cooperation with at least some structuring and monitoring by the instructor.	Through formulating information or ideas in their own words, and receiving feedback and evaluation on these formulations from peers, knowledge, thinking skills, and meanings are socially constructed.
Promotes Equal Interaction: No Competition	Conference does not regulate discussion	Encourage all types of succinct discussions but keep it focused. Encourage ongoing discussion by asking questions.	Strives to keep discussions at a high level, on topic, succinct, takes irrelevant conversations to other venues.

**Table 1: Conference Interaction Model (Lane 2001) (continued)**

<b>Component</b>	<b>Conference Developer</b>	<b>Conference Facilitator</b>	<b>Conference Participant</b>
Scheduling Support	Provide materials on how to structure time for the conference. Key pieces to read, time to allot on a daily basis, what can be done on weekends. Structure should enable learners to stay with the group and learn despite not having read all materials. Downloading materials is not the same as learning from the materials. Insist on short core materials, backed up with more extensive background materials, Web resource sites, books and articles.	Structures session so that all content does not have to be read at once and can be read over the period of a week. Plan activities to further learning in which it is not necessary to have read materials. Provide short pieces of core materials that can be read in five minutes to keep learners in the loop. Provides levels of resources. Tell learners what to read to stay in the session loop.	Commit to staying in the session loop with minimal daily reading. Review materials and time needed. Schedule that as appointment and don't veer from the commitment. Downloading material and not reading it is not a commitment. It is passive learning
Learner Goals	Understand that each learner will have specific goals. Help learners determine and set goals so that the conference meets their expectations	Structure materials so that learners set their goals and know what goals can be met through a specific session. Discuss skills, competencies, basic to advanced information to be delivered, how activities will contribute to learning and which grade bands will benefit most. Provide information about who should not participate in the session if necessary.	Set personal goals to achieve by attending the conference. Do not assume that personal goals and conference goals are in sync. Learners should not feel that they must participate in all sessions. Set realistic goals to meet within realistic timelines. Commit to trying activities with students if appropriate.
24/7 support	24/7 computer support	Responses within 24 hours or before if urgent	Assumes some responsibility for responding to other students when necessary or giving moral support

**Table 1: Conference Interaction Model (Lane 2001) (continued)**

<b>Component</b>	<b>Conference Developer</b>	<b>Conference Facilitator</b>	<b>Conference Participant</b>
Asynchronous with some synchronous interaction	Provides list serves or area for each session and assignment, provides synchronous learning environment which may include online chat, whiteboard, audio conference, video conference	Uses all tools to meet student MI/LS styles	Learns to use all tools
Enables inter-participant interaction	Provides all types of areas for discussions	Allows learner discussions to flourish on content. Encourages conversations to avoid domination by one or several learners.	Participates with all groups, does not capture and dominate a topic or conversation.
Time to Process information	Provide structure to allow learners reflection time. Too much content is a glut and may never be processed and used. Prevent inundation.	Construct session to contribute to the application of what has been learned. Thoughtfully choose useful resources	Learners put ideas into words while applying information, requiring intellectual effort to aid comprehension and retention.
Develop and Support a Learning Community	Provides the space to allow the group to form a community of learners. The space becomes a place. The expertise that members provide leads to more use of the group by all users.	Through collaborative learning, learners move toward logging on more often and using the group as a learning community.	Learners function as a learning community, offer support, advice, suggestions, and ask for same.
Evaluation of Conference	Assess conference for growth by facilitator and learner. Attempt to determine learning impact on K-12 students which can be attributed to the conference.	Strives for growth and new instructional skills. Reviews evaluations to determine how best to meet the needs of learners in future conferences	Provides information about unmet needs and expectations, how content and activities were useful and transferred to the classroom, if/how this impacted student learning
Archive of Conference	Keeps all materials in order from conference as permanent PDF file or CD-ROM		

## Interaction

Bales has defined interaction as the behavior of one person influencing the behavior of another in a face-to-face situation. Interaction analysis in its broadest sense is a method of describing and interpreting human interaction as it occurs in a specific group setting (Bales, 1950 in Emmert, 1970, p. 373). Interactivity is a widely used term, but it is an under defined concept. As a way of thinking about communication, it has high face validity, but only narrowly based explication, little consensus on meaning, and only recently emerging empirical verification of actual role (Hawkins, 1988, p. 110). The most helpful definition for interactivity would be one predicated on the issue of responsiveness. The distinction called for is between interactive, quasi-interactive (reactive), and non-interactive communication sequences. Quasi- and fully-interactive sequences differ clearly from non-interactive communication in requiring that sender and receiver roles be interchangeable with each subsequent message. The complete absence of interaction is marked by incoherent conversation (Hawkins, 1988, p. 110).

“‘Interaction’ is another important term that carries so many meanings as to be almost useless unless specific submeanings can be defined and generally agreed on,” according to Moore (1996). Moore suggests that distance educators need to agree on the distinction among three types of interaction to overcome misunderstandings: learner-content interaction, learner-instructor interaction, and learner-learner interaction. The following definitions are attributed to Moore.

Learner-Content Interaction: The first type of interaction occurs between the learner and the content or subject of study. This is a defining characteristic of education. Without it there cannot be education, since it is the process of intellectually interacting with content that results in changes in the learner’s understanding, the learner’s perspective, or the cognitive structures of the learner’s mind. It is this type of interaction

that is at least partly involved in what Holmberg (1986) calls the “internal didactic conversation” when learners “talk to themselves” about the information and ideas they encounter.

The oldest form of distance teaching that aimed to facilitate interaction with content was the didactic text. In medieval times nearly all texts were aimed at instruction, not merely informing, and not at entertaining. In the nineteenth century, the use of print for teaching was advanced by the invention of home study guides that accompanied a text, providing explanations of it and directions for its study. Recently learners have interacted with content dispersed by radio, television, audiotape, videotape, computer software, CD-ROM, intranets, and the Web.

Some learning programs are solely content-interactive in nature. They are one-way communications with a subject expert (sometimes assisted by an instructional designer), intended to help distant learners in their study of the subject. No other professional teaching expertise is provided and learning is largely self-directed.

Learner-Instructor Interaction: The second type of interaction – regarded as essential by many educators and as highly desirable by many learners – is interaction between the learner and the expert who prepared the subject material or an expert acting as instructor. In this interaction, distance instructors attempt to achieve aims held in common with all other educators.

First, having planned or been given a curriculum, a program of content to be taught, they seek to stimulate or at least maintain the student’s interest in what is to be taught, to motivate the student to learn, to enhance and maintain the learner’s interest, including self-direction and self-motivation. Then instructors make presentations—or cause them to be made. These may be presentations of information, demonstrations of skill, or modeling of certain attitudes and values. Next instructors try to organize

students' application of what is being learned, either the practice of skills that have been demonstrated or the manipulation of information and ideas that have been presented. Instructors organize evaluation to ascertain if learners are making progress and to help decide whether to change strategies. Finally, instructors provide counsel, support, and encouragement to learners, through the extent and nature of this support varies according to educational level of the learners, the teacher's personality and philosophy, and other factors.

The frequency and intensity of the teacher's influence on learners when there is learner-teacher interaction is much greater than when there is only learner-content interaction. In preparing instruction for learner-content interaction, the educator can design written and recorded material that aims to motivate, make presentations, facilitate application, evaluate, and even provide a degree of student affective support. However, the lack of feedback from individual learner to educator makes these teaching procedures highly generalized, not individual, leaving ultimate responsibility for maintaining motivation, for interacting with the presentation for analyzing the success of applications, and for diagnosing the difficulty on the learners themselves, requiring a high degree of learner autonomy.

Where interaction between learner and teacher is possible (e.g., through teleconference), the learner comes under the influence of a professional instructor and is able to draw on the experience of the professional to interact with the content in the manner that is most effective for that particular individual learner. While the students and their instructor are attending to a common piece of presentation (usually in a set text, but quite likely on audio-or videotape), each student's response to the presentation is different, and so the response to each student is different. To some a

misunderstanding is explained, to others elaborations are given, to other simplifications; for one analogies are drawn, for another supplementary readings are suggested.

The instructor is especially valuable in responding to the learner's application of new knowledge. Whatever self-directed learners can do along for self-motivation and interaction with content presented, they are vulnerable at the point of application. They do not know enough about the subject to be sure that they are applying it correctly, applying it as intensively or extensively as possible or desirable, or aware of all the potential areas of application. It is for reality testing and feedback that interaction with an instructor is likely to be most valuable.

Learner-Learner Interaction: It is the third form of interaction that is a challenge to our thinking and practice. This is inter-learner interaction, between one learner and other learners, alone or in group settings, with or without the real-time presence of an instructor.

Through the history of education, the class or educational group has more often than not been organized for reasons that have nothing to do with learners' needs. At present, many classes are organized because the class is the only organizational form known to most teachers and because in the short term—though not usually the long term—it is the cheapest way of delivering the teaching acts of stimulation, presentation, application, evaluation, and student support.

However, learner-learner interacting among members of a class or other group is sometimes an extremely valuable resource for learning and is sometimes even essential. Phillips, Santoro, and Kuehn (1988) describe the importance of interaction among members of an undergraduate class who had to learn skills of group interaction. With the rationale that skilled committee and other group work is essential for functioning in modern society, especially in business, Phillips et al, taught principles of effective

group functioning and trained students in them. This is an example of content that makes group interaction especially valuable. One could study the presentation of principles of group leadership and group membership alone or in interaction with an instructor. However, at the point of application and evaluation, the availability of a group of fellow learners becomes invaluable for learner and instructor alike. Interestingly, the researchers found they could not effectively facilitate interaction among members of a large undergraduate class in face-to-face classrooms and turned to distance education techniques, using recorded video and computer interaction to achieve higher performance in group behaviors than they had been able to obtain in the live groups. Thus, these educators gave their students the advantage of individual interaction with the instructor by electronic correspondence and the benefits of peer group interaction by asynchronous e-mail and by synchronous computer “chatting.”

Apart from teaching interaction itself, when else is inter-learner group interaction highly desirable? The answer to this question depends largely on the circumstances of the learners and their age, experience, and level of learning autonomy. For younger learners, the teaching task of stimulation and motivation will be assisted by peer-group interaction, through this is not particularly important for most adult and advanced learners, who tend to be self-motivated.

“It is most useful for some types of presentations, such as up-to-the-minute reports from experts, and for purposes of application and evaluation,” according to Moore. “In my audio and interactive video classes, weekly presentations are shared by two or more students and last typically for an hour. This is followed by peer discussion and analysis in small groups and then feedback and further discussion. This process is successful because of the level of self-management that adult graduate students possess, and it not only acknowledges and encourages the development of their expertise but also tests

it and teaches important principles regarding the nature of knowledge and the role of the scholar as a maker of knowledge.”

It should be noted that instructors/facilitators learn how to construct good models of interaction for their content by participating in courses about distance learning through distance learning. It is important that they experience learning from the viewpoint of the student or seminar participant. Too frequently, it is assumed that instructor/facilitators can easily step into the role of online facilitator merely because they are experts in an area. It is important to err on the side of insisting that they participate first as learners, then prepare their materials for online use, and finally teach/mentor the online work.

#### Applications

According to Moore, “A significant characteristic of distance education, and a major contribution to the field of education, has been an awareness of the benefits of division of labor in teaching. With the rapid expansion of telecommunications in American education, the principle of specialization of teaching activity and use of communication medium must be applied to distinguish more deliberately among the three types of interaction described above. Educators need to organize programs to ensure maximum effectiveness of each type of interaction and ensure that they provide the type of interaction that is most suitable for the various teaching tasks of different subject areas and for learners at different stages of development.”

Moore says that, “The main weakness of many distance education programs is their commitment to only one type of medium. When there is only one medium, it is probably that only one kind of interaction is permitted or done well. While correspondence gives superior learner-content interaction and good, through slow, learner-instructor interaction, it gives no learner-learner interaction. The teleconference

group is excellent for learner-learner interaction and for some types of instructor-learner interaction, but is frequently misused for instructor presentations that could be done better by print or recorded media. In the time saved by avoiding such presentations, a teleconference could stimulate and facilitate learner-learner interaction that has been difficult or impossible to achieve in distance education until now.”

“In short,” says Moore, “it is vitally important that distance educators in all media do more to plan for all three kinds of interaction and use the expertise of educators and communication specialists in both traditional media and newer teleconference media.”

### Learning Outcomes

The traditional face-to-face classroom learning situation is generally assumed to be the best to support learning, with other learning modes perhaps perceived as less effective.” “There is no evidence to support this assumption,” according to Harasim (1997). “In fact, quite the opposite is true: Online environment facilitated learning outcomes that are equal or superior to those generated in the face-to-face situation (Hiltz 1988a, 1994; Wells 1990).

Online interactions share many characteristics with face-to-face education: input of ideas, class discussions, debates, and other forms of knowledge building through interaction and exchange. The content of the curriculum can be organized topically and sequentially, over time, and students can work in full class group, small groups, dyads, or individually. Teachers have access to the various forms of discussions and course activities. They have as well features distinct from those of face-to-face interactions: participants are geographically dispersed and share their expertise and ideas in a many-to-many, text-based, and asynchronous environment (Harasim, 1990a).

The asynchronicity of online interactions allows participants time to reflect on a topic before commenting or carrying out online tasks. In some network systems, the learners can participate in group discussion only through making an initial comment on the topic. This “introduction” to group discussion with a first thoughtful comment (neither a response or a critique to someone else’s comments) promotes active participation of members.

In research on online graduate courses in education, students identified the following benefits in learning (Harasim, 1987):

Increased interaction: quantity and intensity: “To me, the major success of this course has been the truly interactive involvement through the medium. There was always a large support group (including peers and instructors) to respond to technical, academic, and even emotional (morale-boosting) needs. I’ve never been involved in a course in which I’ve learned so much from other students. This was because there was no competition for the floor and therefore everyone was able to have her say. Also, as remarks were all documented, they were subject to more in-depth consideration than in the normal classroom.”

Better access to group knowledge and support: “The information exchange is more diverse in that input is coming from everyone rather than only from the instructor.”

“I learned much more than in a regular three-hour course because of the interaction of all the students in the course. It is much more enriching this way. Through this medium we could tap the combined knowledge of the group.”

More Democratic environment: “In online discussion, I think that there is a tendency to respond to content rather than to personalities.” “Conferencing as a course vehicle promotes more equal interaction among participants, dropping barriers of geography, urban/rural styles, social skills, mannerisms.”

Convenience of access: “I find myself thinking about the ideas in the online class more because there is no three-hour limit of class time.” “Being able to bring course material and participants into my own environment has allowed me to make it more a part of my life than one in which I participate at a great distance, in time and space, from my own setting. My reflections from the course are interacting constantly with my everyday life, at home and at the school where I teach.

Increased motivation: “I am cold. I need to clean my lenses and I am thirsty. Yet, I’m still here. Know why this is better than TV –the anticipation of a good show, great cast of characters, fast-moving plot, thought-provoking and, like a serial, the end is not in view.”

#### Active Learning

According to Harasim (1997), “Active learning is a major outcome of learning networks. Attendance” in a learning network activity both requires and enables active input. Even at the level of mechanics, the learner must keep actively involved: paying attention, pressing keys. However, active learning is more than just pressing keys: it is social and cognitive engagement. Participation is based on making input, responding to peers, and sharing ideas. A learner is socially present online only when she or he makes a comment. Those who read but do not comment are sometimes referred to as “lurkers” and other members of the conference are likely to cajole or encourage lurkers into active participation. Teachers may allocate a grade for online participation, thereby providing incentives and acknowledging student effort to learn the system and formulate a comment.”

Harasim contends that, “Active participation strengthens learning. Putting ideas or information into written form requires intellectual effort and generally aids

comprehension and retention. Formulating and articulating a statement is a cognitive act, a process that is particularly valuable if comments such as “I don’t agree’ or “I do agree” are followed by “because....”

“Making comments requires the learner to pull ideas and thoughts into a coherent form; this is intellectual work,” says Harasim. Once the statement has been made and presented in the public forum of a conference or email network, it may well receive follow-up comments, such as requesting clarification and expansion or expressing disagreement for various reasons. Such exchange on an idea will require that the original author or another participant defend refine, or acknowledge some fault in the position in a process of cognitive restructuring. The interaction activates intellectual processing and reflection on the idea.”

“Because online learning communities are always open, there is a wide opportunity to participate and to refine and reflect on ideas,” according to Harasim. In the traditional classroom, only one person at a time may speak, and many people who would like to contribute are never called on. In the online environment each student can comment whenever he or she wants.”

“Moreover, ideas can be developed interactively, over time, “ continues Harasim. “Unlike the one-time-only chance to speak up in a typical lecture class, an online student can make many comments over the course of several hours or days. Primary and secondary school students similarly have the opportunity to pursue and develop an idea. The result is that many discussions may be proceeding simultaneously. The online classroom is always open. This expanded access to learning peers and activities encourages reflection and interaction on ideas and building of knowledge.

Collaborative Learning

According to Harasim (1997), collaborative learning refers to any activity in which two or more people work together to create meaning, explore a topic, or improve skills. In a traditional course environment, most assignments are carried out as a private communications between an individual learner and the teacher. There is a clear division of labor and authority between the 'teacher' and the 'learner.' And learning is usually a solitary activity. Since most homework is done outside class, it is difficult to have groups of students work together. Collaborative learning activities are possible face to face, but they are limited by the logistics of students' being able to arrange to meet. With CMS, practically all course activities can be designed as collaborative activities. Through formulating information or ideas in their own words, and receiving feedback and evaluation on these formulations from peers, knowledge, thinking skills, and meanings are socially constructed. "

Harasim continues. "A practical definition of collaborative learning is any learning activity that is carried out using peer interaction, evaluation, and/or cooperation with at least some structuring and monitoring by the instructor. In designing an online course, the creative challenge to the instructor is to rethink the syllabus in order to build in as many collaborative activities as possible."

"Collaborative learning changes the whole nature of the teaching-learning process and the teacher-student relationship," says Harasim. "The educator becomes less an authority figure and more a resource and facilitator for the learning activities of the group."

### Learning Communities

"The community that forms among network users can be both personally and educationally enriching," says Harasim (1997). Many people who enter a learning

network for the first time fear they will find an impersonal, dehumanized space. The social reality of the environment frequently comes as a complete surprise. The communication flows enabled by the networks bring friendship, comradeship, intellectual stimulations, and personal satisfaction. Friendships are formed as the network becomes a “place” to share insights and concerns, problems and solutions, enthusiasms and fears.”

Harasim continues saying that, “Traditional face-to-face courses are short and time to interact is scarce, but the learning network is always available and always there when needed. Since everyone has a chance to “speak,” students report that online environment enable them to communicate with their colleagues more than in face-to-face classes. This is especially true for students at the high school, and tertiary education levels. The text-based nature of the medium has been credited with contributing to personalizing the medium; there is a letter-writing and sometimes even diary-like quality to online communications. Users personalize the medium by sharing information about themselves and focusing on shared interests. Community members come to know one another as individuals and friends. Text-based interactions focus on the meaning of the message rather than the physical cues such as race, gender, age, physical appearance, or dress of the sender, there by reducing some of the discriminatory cues of face-to-face communication.”

“The place-independent nature of network communication offers an opportunity to learn about others and about oneself,” says Harasim. “There is a growing recognition that learning is enhanced by small-group activities and by the ability of individual learners to work in heterogeneous groups to gain differing perspectives and experiences. This is as true for primary school children in Kansas interacting with peers in Russia as it is for a university student in engineering interacting with a sociology

student. The development of learning communities provides the realization of group learning processes on a scale previously inconceivable.”

### Interaction Analysis Techniques

The users of interaction analysis techniques have identified three dimensions: the affective, cognitive, and multidimensional. The affective systems generally examine such teacher behaviors as positive/negative reaction to students, praise, criticism, encouragement, acceptance, and support. The cognitive systems focus on the level of abstraction of a statement, logical processes, and the type of logical or linguistic function a particular behavior seems to serve in the classroom. Multidimensional systems attempt to identify factors from both dimensions, affective and cognitive (Emmert, 1970, p. 374).

Data collection may be handled by taping the interaction, transcribing it, and coding from the typed transaction (Emmert, 1970, p. 374). A coding or sampling unit may represent a unit of time, a thought or verbal unit, a content area, or a sequence of two or more behaviors (Emmert, 1970, p. 374).

Affective systems are probably the earliest and most widely used types of interaction analysis systems as developed in 1945 by H. H. Anderson and H. Brewer. They used a continuum from integrative to dominative to analyze or classify the behavior of both teachers and pupils (Emmert, 1970, p. 374). Using this framework, the Withall (1949) Climate Index was developed and has since been used in various research studies.

Withall's system classifies teacher verbal behavior into seven categories:

- 1) Supportive statements intended to reassure and commend the pupil;
- 2) Accepting and clarifying statements intended to convey to the pupil the feeling that he/she was understood and to help elucidate ideas and feelings;
- 3) Problem structuring statements or questions objectively proffering information or raising questions about the problem in an attempt to help the learner solve his problems;
- 4) Neutral statements - polite formalities, administrative comments, verbatim repetition of something that has already been said - with no inferable intent;
- 5) Directive or authoritative statements intended to make a pupil follow a recommended course of action;
- 6) Reproving or deprecating remarks intended to deter the pupil from continued indulgence in present unacceptable behavior; and
- 7) Self-supporting remarks intended to sustain or justify the teacher's position or course of action (Emmert, 1970, p. 376).

B. O. Smith (1962) pioneered in the area of cognitive dimension with his attempts to develop a method for the logical analysis of the strategies teachers use in the classroom. Another of the early methods used to analyze teaching behavior was developed by Gallagher and Aschner (1963) using Guildford's (1956) framework for looking at the human intellect. This system uses four basic cognitive categories - cognitive memory, convergent thinking, divergent thinking, and evaluation - to analyze both the types of questions the teacher asks and the students' replies (Emmert, 1970, p. 376). The relationship between the types of teacher questions and the types of pupil responses becomes a legitimate research question (Emmert, 1970, p. 377).

With the exception of Withall's system and Joyce and Harootunian's system, all the affective systems use time as a basic sampling unit (Joyce and Harootunian use a shift in content and Withall uses either words or phrases as the basic unit). In addition to the time sampling unit, the Flanders Interaction Analysis and related systems use shifts from one category to another. The basic sampling unit in the cognitive system is always a content or cognitive unit. In the system of Bellack et al, the number of written lines in a one-category sequence is the unit. In the Gallagher-Aschner system as well, the category change indicates the length of the unit. In itself, then unit length is the length of time that teacher or student behavior can be classified into a single category without the intervention of a second category. Smith uses a content change to indicate the length of the basic unit. The multidimensional systems of Honigman and Amidon both reflect the same sampling procedure used in the Flanders Interaction Analysis system (Emmert, 1970, p. 378). For this study, the unit used was one line of type from the transcript.

## The Adult Learning Model

The adult learner has the potential and desire to increase self-directedness in cooperation with other learners and trainers. This means that in the learning situation the adult:

- 1) accepts and wants responsibility;
- 2) orients toward the future;
- 3) values initiative;
- 4) opens up to opportunities when they are presented;
- 5) solves problems; and
- 6) is creative.

Other adult learning concepts include that the instructor;

- 1) set a climate for learning;
- 2) establish a structure for mutual planning;
- 3) diagnose learning needs;
- 4) formulate directions for learning;
- 5) design a pattern of learning experiences;
- 6) manage the execution of the learning experiences;and
- 7) evaluate results and re-diagnose learning needs (Knowles 1970).

## **Basic Interaction Analysis Categories**

These were added as coding factors for the study. For this study, the 10-category Interaction Analysis system (E.J. Amidon and Flanders, 1967) was used. It is a direct outgrowth and refinement of Flanders' original system (Emmert, 1970, p.378).

Two guidelines for setting up categories are used by the observer recording interaction. First, enough categories should be available to the observer to describe any occurrence. Second, the categories should be mutually exclusive so that the observer cannot describe an occurrence with more than one category. All verbal behavior is classified into one of three basic divisions: Teacher talk; student talk; and silence, confusion, or miscellaneous occurrences. Teacher talk is further classified as indirect and direct (Emmert, 1970, p. 381). Subcategories were added (E. J. Amidon, et al., 1968, in Emmert, 1970, p. 398.) which indicates that categories may be added to the existing system. These additional categories show how the original ten categories may be expanded, making it possible for the observer to tailor the observational technique to the particular dimension of concern in human interaction (Emmert, 1970, p. 399).

Occurrences are determined by calculating the percentage of time used for all categories (Emmert, 1970).

For this study, an entirely new category was added to handle the participant interaction in the social areas provided by the conference. The category was called sharing experiences and was broken into categories for students and teachers, teacher initiated discussion with students or student initiated discussion with a teacher.

## **Validity**

The construct validity of interaction analysis is based on a conception of group climate or classroom social-emotional climate. This construct is characterized by the

feelings and attitudes that the members of the group have toward one another, the subject they are studying, their teacher, and the work conducted. Methods used to identify outside criteria for measuring the climate have included supervisory ratings, behavior and reactions of the learners, and in some cases objective observer ratings of climate. The early studies of Withall and Flanders indicate that, in general, where learners have more positive attitudes towards classes, teachers tend to be more indirect than teachers of classes in which learners have more negative attitudes (Emmert, 1970). More recent notions of the validity of interaction analysis have had to do with the relationship between teacher influence patterns and achievement of students. If interaction analysis shows that certain teacher behavior patterns do or do not encourage achievement, then it can be used to predict achievement. Interaction analysis' validity as a prediction tool is much more significant than its validity as a tool simply to describe climate, pupil attitudes toward the class, or pupil perceptions of the teacher.

The results of teacher education research using interaction analysis have added a further dimension to the question of validity. Results of a number of studies (Hawkins, 1988) clearly indicate that teachers who learn interaction analysis are more likely to be accepting, supportive, and less critical than teachers who are not taught interaction analysis. It is a tool that can be used to identify teaching patterns of teachers and to discriminate between groups of teachers who have received different kinds of training.

### **Reliability**

Traditionally, reliability in interaction analysis has been thought of primarily as interobserver agreement for the same classroom observation, or consistency within the same observer across two observations. The problem with the second index of reliability

is that it is difficult to assume that a teacher who is observed by the same observer over periods of time will produce the same behavior.

The computer conferencing required no observation of traditional classroom behavior. The e-mails sent by all participants were used to score the information. Participants knew that aspects of the conference were being evaluated because they were sent two surveys with a letter from the conference director asking for their input.

### **Methodology**

Copies were made of all material sent into the conference. The text was set into three inch lines for to use as the coding unit. The text was coded, and analyzed for the structure provided by the instructor, types of questions asked and the instructor's responses, discussion, group interaction and other factors.

### **Findings**

The transcripts were coded as follows, using the unit of one three inch line of type in the transcript. A total of 16,886 three inch lines of material were analyzed. Teachers accounted for 8,706 lines and students accounted for 8,180 lines. The line by line analysis appears in the Appendix. Teachers spent about eighty percent of their online time providing lecture based materials accounting for 6,512 lines. About ten percent of the time was spent in the informal chat area. Very little of their time was spent using the ideas of the students at 483 lines (about five percent) or asking questions at 693 lines.

Students spent about fifty percent of their time in student initiated content based discussion using 4,073 lines. Another 1,380 lines were accounted for with factual and convergent responses, accounting for almost 5,500 lines in content areas for students. Students spent almost as much time discussing content as teachers spent delivering it.

Students used 1,208 lines for introductions and another 1,513 lines in the informal chat areas; together, these accounted for over twenty percent of their online time.

Two tables are shown below. The first shows the line counts and totals with a full description of the definition of each type of coding. In the second table, the code description has been removed so that the counts can be reviewed more easily. (See Tables 2 and 3.)

**Table: 2:Interaction Counts by All Codes (with code definitions)**

<b>Teacher Talk:</b>	<b>8,706</b>
<b>Teacher Talk: Indirect Influence</b>	
1: Accepts, Clarifies, Student Feelings	<b>55</b>
Used in a number of ways when the teacher communicates acceptance of feelings expressed by learners. First, and probably most basic, the teacher simply uses a word or phrase which identifies the feeling of the pupil without criticizing the pupil for having the feeling. Or he relates the pupil's feeling to other people's feelings. Perhaps he tries to relate the feeling to the supposed cause of the feeling: "I guess we're feeling kind of blue today; I've often felt that way myself when I was disappointed"; "The class seems very excited about our trip to the _____." (Emmert, 1970, p. 381.)	
Reassurance: One kind of behavior which is often misclassified into this category is reassurance. Actually, a reassuring statement is rejection of feeling. When the teacher says, "Don't be upset about your test, it's not all that hard and I know you're very bright," he is, in fact, rejecting or ignoring the pupil's anxiety and concern about the test. (Emmert, 1970, p. 382.)	
2: Praises or Encourages:	<b>103</b>
Statements which evaluate a student's ideas as right, good, or appropriate, for instance, "You are right, that answer is a good answer," or "I like that answer"	
Encouragement means only statements that actually function to encourage the	

learner to continue talking. The teacher's "Uh huh," "Okay," "Yes," "Um hmm," "Right," and "All right" during a learner's hesitations are classified 2 only if they do not inhibit learner talk. Also included are statements which cause laughter, jokes not said at the expense of the learner. In general, includes direct, positive behavior communicating to the listener or the learner "I like what you're doing," "What you're doing is good," "You're right," "Your answer is right," "That good thinking," "That's a good idea."

**3: Accepts or Uses Ideas of Student: statements** **483**  
 rephrasing learner's idea

This includes statements repeating, rephrasing, summarizing, or restating a learner's idea to communicate that the teacher has heard the learner's statement; they do not communicate that the idea is right or wrong.

3a	Acknowledges Student Ideas	131
3c	Clarifies Student Ideas	51
3d	Diagnoses learning needs	73
3D	Designs pattern of learning experiences	124
3f	Formulates directions for learning	61
3E	Evaluates results: re-diagnose needs	35
3s	Summarizes Student Ideas	8

**4: Asks Questions: to gain information, knowledge,** **693**  
 or opinion (not rhetorical questions)

Includes questions about procedure or about content designed to elicit an answer from a student. Only questions which are legitimately designed to gain information, knowledge, or opinion from students are classified in this category; they may be broad in scope or very narrow. This does not include rhetorical questions and questions which communicate sarcasm or criticism.

4f	Asks Factual Questions	95
4c	Asks Convergent Questions	111
4d	Asks Divergent Questions	0
4e	Asks Evaluative Questions	136
4s	Asks for Sharing of experiences	351

**Teacher Talk: Direct Influence**

**5: Gives lecture. facts, information, opinions, ideas,** **6,512**

and orientation (includes rhetorical questions). “Lecture” signifies facts, information, opinions, ideas, and orientation presented to introduce material to the class, review material, or focus attention on an important topic. Usually given in extended time periods. It may be given in response to a student question, or presented to clarify a question the teacher has previously asked or is about to ask. Rhetorical questions are also included in this category. This is the most frequently used category.

5f	Factual Lecturing	2,802
5M	Motivational Lecturing	52
5O	Orientation Lecturing	1,550
5P	Personal Lecturing	571
5R	Gives or asks for Resources	1,537

**6: Gives directions: physical action on the part of the learner 70**

Used when the observer can predict an observable behavior on the part of a learner or the class as a result of the teacher's instruction. “Observable behavior” is usually some physical action on the part of the learner or a specific response which the teacher has demanded.

**7: Criticizes/Justifies Authority: defends position 0**

Criticism is a statement designed to change a learner's behavior from unacceptable to acceptable. In effect, the teacher is saying, “I don't like what you are doing, so something else.” This also includes statements in self-defense or justification of the teacher's behavior or authority often difficult to detect when the teacher appears to be explaining the reasons for a lesson. Loosely, when the teacher is explaining the reasons why he should be telling the learners what to do, why he is the one who makes the decisions, or why he is the one who should be listened to, he is justifying his authority. These also include statements of extreme self-reference in which the teacher asks a learner or the class to do something as a favor to him.

**11. Informal Chat Discussion area 860**

This category was used exclusively

for discussion conducted in the social areas of the conference

11b	Social Discussion	0
11c	Teacher Sharing Experiences	766
11d	Teacher initiated discussion w/student	94

**Student Talk** **8,180**

---

8: Student Talk: predictable response **1,380**

where teacher initiates talk

Used when the teacher directly initiates the contact or solicits the student's statement, and the response by the learner is a predictable response, that is, statements of fact asked for in a question, or limited choice responses which give the learner's feeling or opinion. Example: "Columbus, in 1492" to the question "Who discovered America and when?" Another is the response to the teacher's question "Do you think we did the right thing in Vietnam?" The answer "Yes" is an "8".

8f	Factual Response	140
8c	Convergent Response	1,240

**9: Student talk - Unpredictable: student initiated.** **4073**

---

In general, if the learner raises his /her hand, is acknowledged, and makes a statement or asks a question, he/she has not been prompted by the teacher to talk. The appropriate category is "9". Also when the learner responds at some length to a very broad question asking for opinion or divergent thinking, the category is "9".

Distinguishing between the two categories of learner talk is often very difficult. The criterion seems to be whether or not the observer can predict the general kind of answer that a student will give in response to a question. If the answer is not predictable, then classify as a "9." If it is predictable, then the statement would be classified as an "8". In general, the kind of question asked gives a clue as to whether the learner statement is an "8" or a "9". A broad question will give a clue that a "9" is likely to follow: a narrow question will give a clue that the learner response is likely to be an "8".

9d	Divergent Response	271
----	--------------------	-----

9e	Evaluative Response	328
9i	Initiated Comment	319
9s	Student share experiences and/or solutions	1,618
9t	Student talking to student	1,408
9Q	Student questioning another student	129

**Miscellaneous:**

**10: Silence or confusion** **1,214**

---

This category includes everything not included in the other categories: periods of confusion in communication when it is difficult to determine who is talking, periods when a number of people are talking at once, periods when there is no talking at all, and miscellaneous occurrences such as laughter, music, bells ringing.

10s	Silence	0
10c	Confusion	0
10E	Equip. induced silence/confusion	0
10N	Name/city ID preface	1,208
10Q	Equipment induced Question	6

**Sharing Experiences**

**11: Informal chat Discussion Area** **1,513**

---

This category was used exclusively for discussion conducted in the social areas of the conference

11f	Student Social Discussion	51
11g	Student Sharing Experiences	1,427
11h	Student Initiated Discussion w/teacher	35

Total Units (one line) **16,886**

**Table: 3: Interaction Counts by All Codes (without code definitions)**

<b>Teacher Talk:</b>		<b>8,706</b>
<b>Teacher Talk: Indirect Influence</b>		
<b>1</b>	<b>Accepts, Clarifies, Student Feelings</b>	<b>55</b>
<b>2</b>	<b>Praises and Encourages</b>	<b>103</b>
<b>3</b>	<b>Accepts or Uses Ideas of Student</b>	<b>483</b>
	3a Acknowledges student ideas	131
	3c Clarifies student ideas	51
	3d Diagnoses learning needs	73
	3D Designs pattern of learning experiences	124
	3f Formulates directions for learning	61
	3E Evaluates results: re-diagnose needs	35
	3s Summarizes student ideas	8
<b>4</b>	<b>Asks Questions: to gain information, knowledge</b>	<b>693</b>
	4f Asks factual questions	95
	4c Asks convergent questions	111
	4d Asks divergent questions	0
	4e Asks Evaluative Questions	136
	4s Asks for Sharing of experiences	351
<b>Teacher Talk: Direct Influence</b>		
<b>5</b>	<b>Gives lecture facts, information, opinions, ideas</b>	<b>6,512</b>
	5f Factual Lecturing	2,802
	5M Motivational lecturing	52
	5O Orientation Lecturing	1,550
	5P Personal Lecturing	571
	5R Gives or asks for resources	1,537
<b>6</b>	<b>Gives directions: physical action on the part of the learner</b>	<b>70</b>
<b>7</b>	<b>Criticizes/Justifies Authority: defends position</b>	<b>0</b>
<b>11</b>	<b>Informal Chat Discussion Area</b>	<b>860</b>
	11b Social Discussion	0
	11c Teacher Sharing Experiences	766
	11d Teacher initiated discussion w/student	94
<b>Student Talk</b>		<b>8,180</b>
<b>8</b>	<b>Student Talk: predictable response</b>	<b>1,380</b>
	8f Factual Response	140
	8c Convergent response	1,240
<b>9</b>	<b>Student Talk: Unpredictable, student initiated</b>	<b>4,073</b>
	9d Divergent response	271
	9e Evaluative Response	328
	9i Initiated Comment	319
	9s Student share experiences and/or solutions	1,618
	9t Student talking to student	1,408
	9Q Student questioning another student	129
<b>10</b>	<b>Silence or Confusion</b>	<b>1,214</b>
	10s Silence	0
	10c Confusion	0
	10E Equipment induced silence/confusion	0
	10N Name/city ID preface	1,208
	10Q Equipment induced question	6
<b>11</b>	<b>Informal Chat Discussion Area</b>	<b>1,513</b>
	11f Student Social discussion	51
	11g Student Sharing experiences	1,427
	11h Student initiated discussion w/ teacher	35
<b>Total Lines</b>		<b>16,886</b>

In addition to coding specific types of interaction, the entire conference was coded by segment. The next two tables show the specific type of interaction coding by conference segment. To view the counts more easily, the second chart removes all the interaction coding and shows only the counts for each major segment. Lectures and panels accounted for 7,532 lines. Workshops accounted for 4,627 lines. The Welcome Center accounted for 543 lines and the Poolside café accounted for 3,450, or a total of 3,993 lines (see Tables 4 and 5).

**Table 4: Interaction Coding by Conference Segment**

<b>Arrival Harbor - Welcome Center</b>		<b>543</b>
<b>Table # 61:</b>	<b>Arrival Harbor, Item 1</b>	<b>0</b>
<b>Table # 62:</b>	<b>Arrival Harbor, Item 1</b>	<b>0</b>
<b>Table # 63:</b>	<b>Arrival Harbor, Item 2</b>	<b>33</b>
	Convergent response	8c-1
	Initiated Comment	9i-5
	Student share experiences and/or solution	9s-27
<b>Table # 64:</b>	<b>Arrival Harbor, Item 3</b>	<b>10</b>
	Orientation Lecturing	5O-2
	Gives directions: physical action on the part of the learner	6-8
<b>Table # 65:</b>	<b>Arrival Harbor, Item 4</b>	<b>88</b>
	Asks Factual Questions	4f-8
	Factual Lecturing	5f-80
<b>Table # 66:</b>	<b>Arrival Harbor, Item 5</b>	<b>3</b>
	Praises or Encourages	2-3
<b>Table # 67:</b>	<b>Arrival Harbor, Item 6, Help Desk</b>	<b>214</b>
	Acknowledges student ideas	3a-39
	Asks convergent questions	4c-6
	Factual lecturing	5f-9
	Gives or asks for resources	5R-22
	Gives directions: physical action on the part of the learner	6-12
	Convergent Response	8c-33
	Evaluative response	9e-17
	Initiated comment	9i-10
	Student questioning another student	9Q-1
	Student share experiences and/or solutions	9s-54
	Student talking to student	9t-11
<b>Table # 68:</b>	<b>Arrival Harbor, Item 7, LIVE CHAT!</b>	<b>49</b>
	Gives or asks for resources	5R-6
	Gives directions: physical action on the part of the learner	6-7
	Convergent response	8c-10
	Student sharing experiences and/or solutions	9s-21
	Student talking to student	9t-5
<b>Table # 69:</b>	<b>Sponsors and Exhibitors, Item 2</b>	<b>38</b>
	Acknowledges student ideas	3a-13
	Clarifies student ideas	3c-9
	Orientation lecturing	5O-9
	Convergent response	8c-4
	Student talking to student	9t-3
<b>Table #70:</b>	<b>Sponsors and Exhibitors Item 4</b>	<b>108</b>
	Gives or asks for resources	5R-2
	Student share experiences and/or solutions	9s-81
	Student talking to student	9t-25
<b>Main House Home</b>		<b>7,532</b>
<b>Table #71:</b>	<b>Main House Home, Opening Keynote</b>	<b>19</b>
	Factual lecturing	5f-19
<b>Table #72:</b>	<b>Main House Home, Item 1, Open Keynote</b>	<b>901</b>
	Acknowledges student ideas	3a-12
	Asks for sharing of experiences	4s-3
	Factual lecturing	5f-552

	Motivational lecturing	5M-18	
	Personal lecturing	5P-20	
	Convergent response	8c-41	
	Divergent response	9d-22	
	Evaluative response	9e-99	
	Student questioning another student	9Q-17	
	Student share experiences and/or solutions	9s-54	
	Student talking to student	9t-63	
<b>Table #73:</b>	<b>Main House Home, Item 2, Closing Keynote</b>		<b>2,176</b>
	Orientation Lecturing	5O-1082	
	Factual Lecturing	5f-660	
	Convergent Response	8c-297	
	Divergent Response	9d-148	
	Evaluative Response	9e-42	
<b>Table #74:</b>	<b>Main House Home, Item 3, Panel 1 Those Dreaded Tests Kids HAVE TO Take</b>		<b>1,456</b>
	Praises or Encourages	2-63	
	Formulates directions for learning	3f-47	
	Asks Convergent Questions	4c-4	
	Asks Evaluative Questions	4e-4	
	Asks Factual Questions	4f-5	
	Asks for Sharing of experiences	4s-3	
	Factual Lecturing	5f-266	
	Orientation Lecturing	5O-66	
	Personal Lecturing	5P-148	
	Gives or asks for Resources	5R-272	
	Gives directions: physical action on the part of the learner	6-6	
	Convergent Response	8c-291	
	Factual Response	8f-21	
	Initiated Comment	9i-118	
	Student share experiences and/or solutions	9s-142	
<b>Table #75:</b>	<b>Main House Home, Item 4, Classroom Assessment Issues of Professional Development</b>		<b>1,451</b>
	Acknowledges Student Ideas	3a-12	
	Designs pattern of learning experiences	D.-32	
	Asks Convergent Questions	4c-16	
	Asks Evaluative Questions	4e-09	
	Asks Factual Questions	4f-13	
	Factual Lecturing	5f-167	
	Orientation Lecturing	5O-44	
	Personal Lecturing	5P-63	
	Gives or asks for Resources	5R-72	
	Convergent Response	8c-107	
	Divergent Response	9d-43	
	Evaluative Response	9e-42	
	Initiated Comment	9i-40	
	Student share experiences and/or solutions	9s-530	
	Student talking to student	9t-261	
<b>Table #76:</b>	<b>Main House Home, Item 5 Classroom Assessment from the Inside</b>		<b>869</b>
	Asks Evaluative Questions	4e-1	
	Asks Factual Questions	4f-6	
	Asks for Sharing of experiences	4s-5	

	Factual Lecturing	5f-49	
	Gives or asks for Resources	5R-461	
	Orientation Lecturing	5O-27	
	Personal Lecturing	5P-301	
	Convergent Response	8c-1	
	Initiated Comment	9i-18	
<b>Table #77:</b>	<b>Main House Home, Item 8</b>		<b>335</b>
	<b>Alternative forms of Assessment</b>		
	Praises or encourages	2-3	
	Acknowledges student ideas	3a-13	
	Summarizes student ideas	3s-8	
	Asks for sharing of experiences	4s-9	
	Initiated comment	9i-8	
	Student share experiences and/or solutions	9s-148	
	Student talking to student	9t-146	
<b>Table #78:</b>	<b>Main House Home, Item 9, MW Survey Results</b>		<b>325</b>
	Praises or Encourages	2-8	
	Acknowledges student ideas	3a-4	
	Asks convergent questions	4c-14	
	Asks for sharing of experiences	4s-274	
	Convergent response	8c-19	
	Factual response	8f-6	
<b>Workshop 1</b>			<b>1,541</b>
<b>Table #79:</b>	<b>Workshop 1 Item 1, School-wide Objectives</b>		<b>27</b>
	Orientation Lecturing	5O-27	
<b>Table #80:</b>	<b>Workshop 1 Item 2, Introduction</b>		<b>303</b>
	Factual Lecturing	5f-64	
	Convergent Response	8c-210	
	Initiated Comment	9i-1	
	Student share experiences and/or solutions	9s-28	
<b>Table #81:</b>	<b>Workshop 1 Item 3, Alignment of Curriculum, Assessment and Instruction</b>		<b>649</b>
	Factual Lecturing	5f-148	
	Gives or asks for Resources	5R-123	
	Convergent Response	8c-11	
	Student talking to student	9t-367	
<b>Table #82:</b>	<b>Workshop 1 Item 4, Mathematics Portfolio Assessment</b>		<b>412</b>
	Orientation Lecturing	5O-4	
	Gives or asks for Resources	5R-398	
	Gives directions: physical action on the part of the learner	6-9	
	Student questioning another student	9Q-1	
<b>Table #83:</b>	<b>Workshop 1 Item 5, Parent/Community Strategies For School Wide Improvement</b>		<b>110</b>
	Personal Lecturing	5P-23	
	Gives or asks for Resources	5R-78	
	Initiated Comment	9i-9	
<b>Table #84:</b>	<b>Workshop 1 Item 6, Closing</b>		<b>40</b>
	Praises or Encourages	2-11	
	Convergent Response	8c-19	
	Student share experiences and/or solutions	9s-10	

<b>Workshop 2</b>		<b>1,813</b>
<b>Table #85:</b>	<b>Workshop 2, Item 1, Practical Ideas for Performance Tasks</b>	<b>15</b>
	Factual Lecturing	5f-12
	Gives directions: physical action on the part of the learner	6-3
<b>Table #86:</b>	<b>Workshop 2, Item 2, Introduction What are Performance Activities?</b>	<b>5</b>
	Asks factual questions	4f-1
	Factual lecturing	5f-4
<b>Table #87:</b>	<b>Workshop 2, Item 3, Then and Now</b>	<b>503</b>
	Accepts, Clarifies, student feelings	1-24
	Praises and Encourages	2-15
	Acknowledges student ideas	3a-21
	Diagnoses learning needs	3d-35
	Designs pattern of learning experiences	3D.-52
	Convergent response	8c-73
	Factual response	8f-6
	Divergent response	9d-29
	Evaluative response	9e-32
	Student questioning another student	9Q-61
	Student share experiences and/or solutions	9s-136
	Student talking to student	9t-99
<b>Table #88:</b>	<b>Workshop 2, Item 4 Creating High Quality Performance Tasks</b>	<b>304</b>
	Accepts, clarifies student feelings	1-21
	Acknowledges student ideas	3a-10
	Clarifies student ideas	3c-9
	Diagnoses learning needs	3d-9
	Formulates directions for learning	3f-2
	Asks convergent questions	4c-10
	Asks factual questions	4f-7
	Motivational lecturing	5M-10
	Orientation lecturing	5O-9
	Convergent response	8c-25
	Divergent response	9d-29
	Evaluative response	9e-41
	Initiated comment	9i-18
	Student questioning another student	9Q-29
	Student share experiences and/or solutions	9s-56
	Student talking to student	9t-19
<b>Table #89:</b>	<b>Workshop 2, Item 5, Scoring Tasks</b>	<b>395</b>
	Accepts, clarifies student feelings	1-7
	Clarifies student ideas	3c-33
	Evaluates results: re-diagnose needs	3E-15
	Factual lecturing	5f-14
	Personal lecturing	5P-7
	Convergent response	8c-38
	Evaluative response	9e-2
	Initiated comment	9i-8
	Student questioning another student	9Q-20
	Student share experiences and/or solutions	9s-213
	Student talking to student	9t-38
<b>Table #90:</b>	<b>Workshop 2, Item 6, Exemplar Tasks</b>	<b>305</b>

	<b>for Exploration and Use</b>		
	Acknowledges student ideas	3a-17	
	Diagnoses learning needs	3d-16	
	Evaluates results: re-diagnose needs	3E-20	
	Asks convergent questions	4c-9	
	Asks factual questions	4f-15	
	Factual lecturing	5f-94	
	Motivational lecturing	5M-24	
	Gives or asks for resources	5R-11	
	Convergent response	8c-20	
	Factual response	8f-7	
	Evaluative response	9e-42	
	Initiated comment	9i-5	
	Student talking to student	9t-25	
<b>Table #91:</b>	<b>Workshop 2, Item 3, Practical Ideas for Creating and Using Performance Tasks</b>		<b>286</b>
	Asks convergent questions	4c-33	
	Factual lecturing	5f-54	
	Orientation lecturing	5O-199	
<b>Workshop 3</b>			<b>617</b>
<b>Table #92:</b>	<b>Workshop 3, Item 1, Open Ended Response</b>		<b>8</b>
	Orientation Lecturing	5O-8	
<b>Table #93:</b>	<b>Workshop 3, Item 2, Open Ended Questions</b>		<b>41</b>
	<b>Maintaining a Balance</b>		
	Factual Lecturing	5f-35	
	Initiated Comment	9i-6	
<b>Table #94:</b>	<b>Workshop 3, Item 3, Similarities and Differences</b>		<b>83</b>
	Asks Factual Questions	4f-40	
	Orientation Lecturing	5O-3	
	Initiated Comment	9i-17	
	Student talking to student	9t-23	
<b>Table #95:</b>	<b>Workshop 3, Item 4, Factors to Consider</b>		<b>88</b>
	Factual Lecturing	5f-48	
	Gives or asks for Resources	5R-40	
<b>Table #96:</b>	<b>Workshop 3, Item 5, Samples</b>		<b>61</b>
	Asks Evaluative Questions	4e-4	
	Gives or asks for Resources	5R-44	
	Initiated Comment	9i-13	
<b>Table #97:</b>	<b>Workshop 3, Item 6, Assessment</b>		<b>99</b>
	Accepts, Clarifies, Student Feelings	1-1	
	Factual Lecturing	5f-67	
	Gives or asks for Resources	5R-8	
	Convergent Response	8c-19	
	Initiated Comment	9i-4	
<b>Table #98:</b>	<b>Workshop 3, Item 7, What do you Think?</b>		<b>237</b>
	Asks Convergent Questions	4c-15	
	Asks for Sharing of experiences	4s-5	
	Convergent Response	8c-8	
	Factual Response	8f-14	
	Initiated Comment	9i-25	
	Student share experiences and/or solutions	9s-38	

	Student talking to student	9t-132	
<b>Workshop 4</b>			<b>454</b>
<b>Table #99:</b>	<b>Workshop 4, Item 1, Aligning Classroom Assessments to Standards</b>		<b>15</b>
	Orientation Lecturing	50-15	
<b>Table #100:</b>	<b>Workshop 4, Item 2, Introduction</b>		<b>35</b>
	Factual Lecturing	5f-9	
	Orientation Lecturing	50-15	
	Initiated Comment	9i-11	
<b>Table #101:</b>	<b>Workshop 4, Item 3, Activity 1</b>		<b>186</b>
	Asks Evaluative Questions	4e- 51	
	Factual Lecturing	5f-31	
	Factual Response	8f-29	
	Evaluative Response	9e-11	
	Initiated Comment	9i-3	
	Student talking to student	9t-61	
<b>Table #102:</b>	<b>Workshop 4, Item 4, Activity 2</b>		<b>95</b>
	Asks Evaluative Questions	4e-30	
	Personal Lecturing	5P-9	
	Factual Response	8f-53	
	Student talking to student	9t-3	
<b>Table #103:</b>	<b>Workshop 4, Item 5, Are We Assessing What We Think We Are Assessing</b>		<b>41</b>
	Formulates directions for learning	3f-12	
	Gives directions: physical action on the part of the learner	6-23	
	Convergent Response	8c-6	
<b>Table #104:</b>	<b>Workshop 4, Item 6, How Do We Link the Assessment to Instruction?</b>		<b>35</b>
	Asks Evaluative Questions	4e-31	
	Factual Response	8f-4	
<b>Table #105:</b>	<b>Workshop 4, Item 7, Activity 5 Retracing Our Steps</b>		<b>47</b>
	Asks for Sharing of experiences	4s-23	
	Student talking to student	9t-24	
<b>Workshop 5</b>			<b>302</b>
<b>Table #106:</b>	<b>Workshop 5, Item 1, Technology &amp; Assessment:</b>		<b>25</b>
	Orientation Lecturing	50-25	
<b>Table #107:</b>	<b>Workshop 5, Item 2 Introduction, Technology and Assessment; How Do They Fit Together</b>		<b>35</b>
	Factual Lecturing	5f-35	
<b>Table #108:</b>	<b>Workshop 5, Item 3, Discussion 1</b>		<b>242</b>
	Asks Evaluative Questions	4e-6	
	Factual Lecturing	5f-61	
	Student share experiences and/or solutions	9s-72	
	Student talking to student	9t-103	
<b>Greenroom</b>			<b>464</b>
<b>Table #109:</b>	<b>Greenroom, Item 4, Marketing</b>		<b>57</b>
	Diagnoses learning needs	3d-13	
	Designs pattern of learning experiences	3D.-40	
	Convergent response	8c-4	
<b>Table #110:</b>	<b>Greenroom, Item 5, Registration and Payments</b>		<b>11</b>

	Convergent response	8c-3	
	Student Name/city ID preface and/or solutions	9s-8	
<b>Table #111:</b>	<b>Greenroom, Item 6, Keep Me Informed</b>		<b>39</b>
	Accepts, clarifies student feelings	1-2	
	Orientation lecturing	5O-37	
<b>Table #112:</b>	<b>Greenroom, Item 7, Education in the News</b>		<b>324</b>
	Factual lecturing	5f-324	
<b>Table #113:</b>	<b>Greenroom, Item 8, Power Point Test</b>		<b>1</b>
	Gives directions: physical action on the part of the learner	6-1	
<b>Table #114:</b>	<b>Greenroom, Item 9, Test Power Point</b>		<b>1</b>
	Gives directions: physical action on the part of the learner	6-1	
<b>Table #115:</b>	<b>Greenroom, Item 10, Welcome</b>		<b>31</b>
	Orientation lecturing	5O-31	
<b>Poolside Cafe</b>	<b>3,450</b>		
<b>Table #116:</b>	<b>Resort Fun, PBS MW</b>		<b>33</b>
	Asks convergent question	4c-4	
	Asks for sharing of experiences	4s-29	
<b>Table #117:</b>	<b>Poolside Café, Item 1, Welcome</b>		<b>15</b>
	Teacher initiated discussion w/student	11d-15	
<b>Table #118:</b>	<b>Poolside Café, Item 2, Introduce Yourself</b>		<b>1,242</b>
	Name/city ID preface	10N-1208	
	Sharing Experiences	11c-10	
	Teacher initiated discussion w/student	11d-24	
<b>Table #119:</b>	<b>Poolside Café, Item 3, Math in the News</b>		<b>590</b>
	Sharing experiences	11c-307	
	Teacher initiated discussion w/student	11d-2	
	Sharing experiences	11g-267	
	Student initiated discussion w/teacher	11h-14	
<b>Table #120:</b>	<b>Poolside Café, Item 4, Question of the Day</b>		<b>11</b>
	Teacher initiated discussion w/student	11d-2	
	Sharing experiences	11g-179	
<b>Table #121:</b>	<b>Poolside Café, Item 5, Recommended Article</b>		<b>351</b>
	Sharing experiences	11c-244	
	Student Social discussion	11f-51	
	Sharing experiences	11g-56	
<b>Table #122:</b>	<b>Poolside Café, Item 6, What's on your mind?</b>		<b>751</b>
	Equipment induced silence/confusion	10Q-1	
	Sharing experiences	11c-160	
	Teacher initiated discussion w/student	11d-10	
	Sharing experiences	11g-569	
	Student initiated discussion w/teacher	11h-11	
<b>Table #123:</b>	<b>Poolside Café, Item 7, Networking</b>		<b>78</b>
	Teacher initiated discussion w/student	11d-5	
	Sharing experiences	11g-69	
	Student initiated discussion w/ teacher	11h-4	
<b>Table #124:</b>	<b>Poolside Café, Item 8, Education Stories</b>		<b>28</b>
	Teacher initiated discussion w/student	11d-3	
	Sharing experiences	11g-25	
<b>Table #125:</b>	<b>Poolside Café, Item 9, Educational Quotes</b>		<b>40</b>
	Sharing Experiences	11c-6	
	Teacher Initiated Discussion w/student	11d-2	
	Sharing Experiences	11g-32	

<b>Table #126:</b>	<b>Poolside Café, Item 10, Online Improv</b>		<b>128</b>
	Sharing experiences	11c-33	
	Teacher initiated discussion w/student	11d-20	
	Sharing experiences	11g-75	
<b>Table #127:</b>	<b>Poolside Café, Item 11, PBS Program</b>		<b>153</b>
	Sharing experiences	11c-6	
	Teacher initiated discussion w/student	11d-6	
	Sharing experiences	11g-141	
<b>Table #128:</b>	<b>Poolside Café, Item 13, Certificate of Attendance</b>		<b>14</b>
	Equipment induced question	10Q-5	
	Teacher initiated discussion w/student	11d-1	
	Sharing experiences	11g-8	
<b>Table #129:</b>	<b>Poolside Café, Item 14, Parting Comments</b>		<b>16</b>
	Teacher initiated discussion w/student	11d-4	
	Sharing experiences	11g-6	
	Student initiated discussion w/teacher	11h-6	

**Table 5: Interaction Counts by Conference Segment**

Arrival Harbor	Welcome Center & Sponsors/Exhibitors	543
Main House	Lectures, Panels	7,532
Workshop 1	Schoolwide Objectives	1,541
Workshop 2	Practical Ideas for Performance Tasks	1,813
Workshop 3	Open Ended Responses	617
Workshop 4	Aligning Classroom Assessment to Standards	454
Workshop 5	Technology & Assessment	202
Greenroom	For facilitators	464
Poolside Cafe	Chat	3,450

**Recommendations**

The MathWeb 2000 conference and the research conducted during and after the event frame the model of use of online e-conferencing for mathematics teachers as well as for other educational professional development.

The interaction research clearly shows a pattern of adoption by the facilitators and the participants. The large amount of interaction at the content level by participants with facilitators and with other participants show a fast adaptation to the medium and a highly developed comfort level with it by the majority of the participants.

Some participants were not sure about when the e-conference began. For some reason, they expected to receive an e-mail telling them that the conference had started. This is an effective way to ensure that participants attend the conference.

There was an early period in the conference where the participants were unsure about how to effectively interact. However, they continued to participate and began to develop their own style. In the future, they should receive information about effective interaction along with examples of it.

Facilitators did not receive enough information about developing an interactive style. They should receive extensive information about this in the future and have the support of instructional designers who are experts in online design.

In response to survey questions, participants repeatedly remarked that they did not have enough time to participate, that they needed time to catch up, and that there was too much information to process. Most said they were downloading the information and resources as they felt it was quite valuable. To assist participants in scheduling their time, a longer conference should be considered. Four weeks may be enough time for participants to process information. It would also be useful to provide participants with examples of how

to plan their time and how long they might expect to spend reading content materials, interacting with facilitators and other participants,

Some participants asked for grade band specific content and that sessions provide information about the appropriateness of sessions for grade bands. If the session was appropriate for all grade bands, materials should be provided to help teachers apply the content to specific grade levels.

The literature shows very little research in the use of e-conferencing for educational professional development. Computer conferencing is used extensively for educational courses, training and corporate professional development. Research is showing that it is effective. Participants like it and feel that it meets a great many of their needs for scheduling time, and meeting personal and professional obligations when it is convenient.

The MathWeb 2000 Conference and research have opened a new and productive are for professional development.

As new MathWeb online e-conferences are planned, research should continue to determine if the model needs further refinements, if the research can be replicated to further validate this research, and to determine if the recommendations improve the conference.

Additional research should be conducted to determine the learning impact of the conference content and to assess the transfer to the classroom that is the basis for professional development.

## **Analysis of MathWeb 2000**

### **Online Surveys**

#### **Methodology**

Survey data was gathered via a Web-based survey. The survey was gathered in two time periods: at the end of the first week and again at the end of the second week of a three-week, MathWeb 2000 seminar. All participants who had signed up for the online seminar were sent e-mail to their personal e-mail address informing them of the evaluation instrument and asking them to go to the Web site and fill in the instrument.

Data captured for those two surveys were cleaned using a standard text editor. The data were then loaded into the StatView (version five) statistical program.

Each applicable survey question was analyzed, in turn, using applicable descriptive statistical methods. The results are displayed below. The questions on the first week and second week surveys were identical, except for the addition of a final question on the second week survey. In the analysis each survey question is presented with the survey results for that question displayed separately for the first and second weeks. A comparison of the results follows.

The majority of quantitative questions use a four-point Likert scale for response where one was a low score and four was a high score. There is an assumption of an approximate equal interval relationship between the four Likert points. The Likert scale analyses involved creating a table illustrating response frequency, displaying a frequency percentage for each response, enumerating any missing responses, and computing a mean. To compare the first and second week survey responses, a table is generated for each survey week. To facilitate visual comparison, a third table is then

generated with the mean and frequency response percentage (for each possible Likert response) shown in concatenated or linked format with the first week on the top and the second week underneath.

Qualitative responses were reported verbatim (i.e., no editing was done grammatically or otherwise, except for the removal of certain commas and “hard returns” that, when left unedited, confounded the proper alignment of variable fields and data in the statistical program). Additionally, if appropriate, the qualitative responses were grouped by obvious response categories to enhance further understanding and higher-level analysis. Under the table boxes listing the qualitative responses to any particular question, is a “group summary” table that details the frequency that responses fell within the various groups assigned. Since some responses may fall under several groups, the numbers in the “group summary” table may exceed the number of responses.

There are 73 valid survey responses considered in this analysis completed by 73 educators participating in the MathWeb 2000 seminar. Forty-three educators responded to the first week survey and 30 educators responded to the second week survey. Nineteen of the same educators completing the first week survey also completed the second week survey. Not all educators answered every question. The number of “no” responses will be reported when necessary with each item of the survey summary below.

## Educators' States

On both the first and second week surveys, responding educators reported a dispersion of locations encompassing all major geographic sections of the United States plus a few other countries. On both surveys the largest concentration of responding educators was from the Middle Atlantic States (11 and seven for first and second weeks respectively). See Table 6 below.

**Table 6: Educators' States: First and Second Week Survey**

<b>Geographic Section</b>	<b>1<sup>st</sup> Week</b>	<b>2<sup>nd</sup> Week</b>
New England States	3	3
Middle Atlantic States	11	7
South Eastern States	6	4
South Western States	2	0
Mid-Western States	4	2
Central Plains States	2	1
North Central States	4	4
Western States	3	2
Pacific North Western States (Including Alaska)	4	3
Other Countries	4	2
<b>Total</b>	<b>43</b>	<b>28</b>
Missing Responses	0	2

## Grades Taught by Responding Educators

Grades taught can be generalized to grades influenced for administrators who responded to the survey. Grade spans were set to conduct the analysis by grade levels taught by the educators attending the online conference. Elementary school was set for Kindergarten through fifth grades. Middle school grades were set for sixth through eighth grades. High school was set for ninth through twelfth grades. Higher education was set at grades thirteen and above.

The totals of percentages exceed 100 percent because many responding educators reported teaching across grade spans, e.g., some reported teaching K-12. Of the 43 first week respondents, 16 taught elementary grades, 15 taught middle grades, 20 taught high grades, and three taught in higher education. Of the 30 second week respondents, eight taught in elementary grades, nine taught in middle grades, nine taught in high grades, one taught in higher education, and four did not respond to this question

(See Table 7.)

**Table 7: Educators' Teaching Grade Span: First and Second Week Survey**

Grade Span	Week 1 Respondents	Week 1 % of Respondents	Week 2 Respondents	Week 2 % of Respondents
Elementary School: Grades K through 5	16	37	8	31
Middle School: Grades 6 through 8	15	35	9	35
High School: Grades 9 through 12	20	47	9	35
Higher Education: Grades 13 and above	3	7	1	4
Total	54		27	
Missing Responses	0		4	

### Subjects Taught by Responding Educators

Three categories of subjects taught responses were identified: Math or math education, computers/technology, and administrators. Of the 43 first week respondents, 37 teach math or math education, four teach computers/technology, and two are administrators. Of the 30 second week respondents, 27 teach math or math education, one teaches computers/technology, and two did not respond to this question. (See Table 8.)

**Table 8: Subjects Taught: First and Second Week Survey**

<b>Subject</b>	<b>Week 1 Respondents</b>	<b>Week 1 % of Respondents</b>	<b>Week 2 Respondents</b>	<b>Week 2 % of Respondents</b>
Math or Math Education	37	86	27	96
Computers/Technology	4	9	1	4
Administrators	2	5	0	0
Total	43	100	28	100
Missing Responses	0		2	2

### Years Taught by Responding Educators

Three spans for years taught were identified for analysis purposes: zero to nine years, ten-19 years, and 20 and above years. Of the 43 first week respondents, 12 taught between zero and nine years, ten taught between ten and 19 years, 16 taught 20 or more years, and five did not respond to this question. Of the 30 second week respondents, three taught between zero and nine years, 11 taught between ten and 19 years, ten taught 20 or more years, and six did not respond to this question. (See Table 9.)

**Table 9: Educators' Years Taught: First and Second Week Survey**

<b>Years Taught</b>	<b>Week 1 Respondents</b>	<b>Week 1 % Percent of Respondents</b>	<b>Week 2 Respondents</b>	<b>Week 2 % of Respondents</b>
Taught 0-9 Years	12	32	3	12
Taught 10-19 Years	10	26	11	46
Taught 20 of More Years	16	42	10	42
Total	38	100	24	100
Missing Responses	7		6	

### **MathWeb 2000 Met Content and Learning Needs**

Tables below summarize the first and second week response data respectively to the question of whether MathWeb 2000 met the respondent's content and learning needs. The scale indicates that four is high and one is low. Note that between the first and second week the mean response increases from 3.103 to 3.259 indicating a slight increase in the perception by respondents that their needs are being met. The Likert response distribution changed from 33 percent, 51 percent, eight percent, eight percent for four, three, two, and one respectively for the first week to 48 percent, 38 percent, 15 percent, four percent for four, three, two, and one respectively for the second week. (See Tables 10 and 11.)

The comparison of the two weeks' frequency response percentage shows an increase from 33 percent to 48 percent in the highest category (i.e., Likert 4). There is relatively little change in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3)—84 percent to 81 percent. (See Table 12.)

**Table 10: Met Content/Learning Needs: First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.103	13	20	3	3	4
Percent	33	51	8	8	

**Table 11: Met Content/Learning Needs: Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.259	13	9	4	1	4
Percent	48	33	15	4	

**Table 12: Met Content/Learning Needs?  
First and Second Week Survey Comparison**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
<b>1<sup>st</sup> Week</b>	3.103	33	51	8	8
<b>2<sup>nd</sup> Week</b>	3.259	48	33	15	4

## Content Level Appropriateness

The tables below summarize respectively the first and second week response data to a question as to whether the content level was appropriate for the respondent. Note that between the first and second week the mean response drops very slightly from 3.436 to 3.385 indicating that the respondents felt the appropriateness of the content level had dropped slightly. The scale indicated that four was high and one was low. The Likert response distribution changed from 61 percent, 28 percent, three percent, eight percent for four, three, two, and one respectively for the first week to 46 percent, 46 percent, eight percent, zero percent for four, three, two, and one respectively for the second week. (See Tables 13 and 14.)

The comparison of the two weeks' frequency response percentage shows a decrease from 61 percent to 46 percent in the highest category (i.e., Likert 4), while showing an increase from 89 percent to 92 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3). (See Table 15.)

**Table 13: Content Level Appropriateness: First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.436	24	11	1	3	4
Percent	61	28	3	8	

**Table 14: Content Level Appropriateness: Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.385	12	12	2	0	4
Percent	46	46	8	0	

**Table 15: Content Level Appropriateness:  
First and Second Week Survey Comparison**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
1 <sup>st</sup> Week	3.436	61	28	3	8
2 <sup>nd</sup> Week	3.385	46	46	8	0

**What Other Content or Information Would Be Useful?**

The table below lists the qualitative responses to a question that asked what other content or information would be useful to the respondent. The table indicates the survey week, and assigns a category to the response. There were 20 qualitative responses to this question; 16 in the first week survey and four in the second week survey. (See Table 16)

A table summarizes the number of responses in each response category. Over half the responses concern either the necessity for more diverse topics or the need for enhancements to the conference logistics. (See Table 17.)

**Table 16: What other content or information would be useful?  
First and Second Week Surveys**

First Week Response	Second Week Response	Response Group
Make it a month long as we have had technological problems in our building with the implementation of Win 2000 and haven't had access at times so I feel I missed out.	I don't know where to put this... I still haven't been able to get on. Mostly my fault and time problems but I don't know my password and haven't received the CD's in the mail... I thought the page I printed out (my receipt) had my password on it and when.	Conference Logistics
A reminder with the sight would be nice. I had the dates of the conference on my post-it but not	I didn't realize that the site was only active for 3 weeks. Somehow I missed that detail.	Conference Logistics

<b>First Week Response</b>	<b>Second Week Response</b>	<b>Response Group</b>
the site.	I explored the site once but was short on time. I was sorry to see it closed yesterday.	
I was not aware the conference had actually started! This is the first recent information I have received! I do not know how to access what I have paid for!		Conference Logistics
PLEASE do NOT give info about attendees to vendors/companies w/out approval. Shortly after logging on for the first time I began receiving postal mailings from Software companies trying to sell me on Math Software etc.		Privacy from Vendors
Since I'm new to this type of conference I'm not sure what to say. I would like information on different styles of teaching.		How to work in this environment
Resources for classroom teachers that meet the Standards. Reviews of those resources - open forum as to how different people liked them.		Teaching methods/resources
Just waiting for the classroom assessment part of the workshop to open more fully.	More Specifics or sample assessment tools	Assessment
More diversified topics if possible.	Many (most) of the conversations regard secondary assessment issues. I have seen very little regarding elementary education issues	More diverse topics
<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
I would like to see conferences geared to different content areas e.g. middle school math high school math graphing calculator use.		More diverse topics
More math websites		More website resources
Specialized chat sites i.e. math support specialists elementary algebra special needs etc.		More diverse topics
Do not specialize in what is happening in one state. Generalize presentations for all areas of the country.		More diverse topics

First Week Response	Second Week Response	Response Group
This is a great way to deliver a conference. I could print the articles and read them whenever I had a chance.		Compliment
	More discussion on what information should be required to graduate from high school. Which standards and at what level should be considered proficient for all students (those going on to higher education and those not).	Proficiency standards
Have not had time to go into the conference much as am busy with local election.		Not fully utilizing site
I did not participate the first week. What did I miss in terms of getting started?		Not fully utilizing site
At this point I'm not sure since I have not yet been to all the sites.		Not fully utilizing site

**Table 17: What other content or information would be useful  
Response Group Summaries**

Response Group	Number of Responses in Group
More diverse topics	5
Conference logistics	4
Privacy from vendors	1
Assessment	1
Proficiency standards	1
Teaching methods/resources	2
Compliment	1
More Website resources	1
Not fully utilizing site	3

### Amount of Interaction Between Respondents and Lecturers

Summarized below are the first and second week response data to the question about the level of interaction between the respondents and the lecturers. Note that between the first and second week the mean response drops from 2.162 to 1.885. The scale indicated that a four was high and a one was low. The Likert response distribution

changed from 16 percent, 24 percent, 19 percent, 41 percent for four, three, two, and one respectively for the first week to 12 percent, 16 percent, 23 percent, 50 percent for four, three, two, and one respectively for the second week. (See Tables 18 and 19.)

The comparison of the two weeks' frequency response percentage shows a decrease from 16 percent to 12 percent in the highest category (i.e., Likert 4), and shows a decrease from 40 percent to 28 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3). (See Table 20.)

These responses indicate that the respondents did not feel that the level of interaction was high enough during the first week and that they felt it dropped during the second week of the conference. They wanted more interaction. Some qualitative responses also indicated that there was a lack of understanding about interaction. Respondents wanted to know how to interact so that they got more from the conference. They weren't sure if what they were doing for interaction was appropriate

**Table 18: Interaction Levels Between Respondents and Lecturers:  
First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
2.162	6	9	7	15	6
Percent	16	24	19	41	

**Table 19: Interaction Levels Between Respondents and Lecturers:  
Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
1.885	3	4	6	13	4
Percent	12	16	23	50	

**Table 20: Interaction Levels Between Respondents and Lecturers:  
First and Second Week Survey Comparison:**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
1 <sup>st</sup> Week	2.162	16	24	19	41
2 <sup>nd</sup> Week	1.885	12	16	23	50

### **Interaction Levels Between Respondents and Workshop Moderators**

Summarized below is the first and second week response data to the question about the appropriateness of interaction levels between respondents and workshop moderators. Note that between the first and second week the mean response drops from 2.135 to 2.000. The scale indicated that four is high and one is low. The Likert response distribution changed from eight percent, 30 percent, 30 percent, 32 percent for four, three, two, and one respectively for the first week to 12 percent, 23 percent, 19 percent, 46 percent for four, three, two, and one respectively for the second week. (See Tables 21 and 22.)

The comparison of the two weeks' frequency response percentage shows an increase from eight percent to 12 percent in the highest category (i.e., Likert 4), while showing a decrease from 38 percent to 35 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3). (See Table 23.)

These scores indicate that the respondents interpreted the interaction as low and wanted a higher level of interaction from the workshop moderators.

**Table 21: Interaction Levels Between Respondents and Workshop Moderators:  
First Week Survey:**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
2.135	6	11	11	12	6
Percent	8	30	30	32	

**Table 22: Interaction Levels Between Respondents and Workshop Moderators:  
Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
2.000	3	6	5	12	4
Percent	12	23	19	46	

**Table 23: Interaction Levels Between Respondents and Workshop Moderators:  
First and Second Week Survey Comparison:**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
<b>1<sup>st</sup> Week</b>	2.135	8	30	30	32
<b>2<sup>nd</sup> Week</b>	2.000	12	23	19	46

### **Interaction Levels Between Respondents and Conference Moderators/Directors**

Tables 24 and 25 below summarize respectively the first and second week response data to a question about the amount of interaction between the respondents and the conference moderators and directors. The scale indicated that four is high and one is low. Note that between the first and second week the mean response increases slightly from 2.054 to 2.077. The Likert response distribution changed from eight percent, 30 percent, 22 percent, 40 percent for four, three, two, and one respectively for the first week to 15 percent, 15 percent, 31 percent, 39 percent for four, three, two, and one respectively for the second week.

The comparison of the two weeks' frequency response percentage in Table 26 below shows an increase from eight percent to 15 percent in the highest category (i.e., Likert 4), while showing a decrease from 38 percent to 30 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3).

These scores show that the respondents interpreted the interaction as low and wanted a higher level of interaction from the conference moderators and directors.

**Table 24: Interaction Levels Between Respondents and Conference Moderators/Directors: First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
2.054	3	11	8	15	6
Percent	8	30	22	40	

**Table 25: Interaction Levels Between Respondents and Conference Moderators/Directors: Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
2.077	4	4	8	10	4
Percent	15	15	31	39	

**Table 26: Interaction Levels Between Respondents and Conference Moderators/Directors: First and Second Week Survey Comparison**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
1 <sup>st</sup> Week	2.054	8	30	22	40
2 <sup>nd</sup> Week	2.077	15	15	31	39

## Overall Level of Interaction

Tables 27 and 28 below summarize respectively the first and second week response data to the question about the overall level of interaction between respondents and all others which included the conference moderators and all lecturers, workshop moderators, conversation moderators and others. The scale indicated that four is high and one is low. Note that between the first and second week the mean response decreases from 2.351 to 2.154. The Likert response distribution changed from 16 percent, 35 percent, 16 percent, 33 percent for four, three, two, and one respectively for the first week to 15 percent, 23 percent, 23 percent, 39 percent for four, three, two, and one respectively for the second week.

The comparison of the two weeks' frequency response percentage in Table 29 below shows a slight decrease from 16 percent to 15 percent in the highest category (i.e., Likert 4), and shows a decrease from 51 percent to 38 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3).

These scores indicate that the respondents wanted a higher level of interaction throughout the conference.

**Table 27: Overall level of Interaction: First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
2.351	6	13	6	12	6
Percent	16	35	16	33	

**Table 28: Overall level of Interaction: Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
2.154	4	6	6	10	4
Percent	15	23	23	39	

**Table 29: Overall level of Interaction: First and Second Week Survey Comparison**

	Mean	4 %of Respondents	3 %of Respondents	2 %of Respondents	1 %of Respondents
<b>1<sup>st</sup> Week</b>	2.351	16	35	16	33
<b>2<sup>nd</sup> Week</b>	2.154	15	23	23	39

## **Respondent's Level of Participation as Compared to Face-to-Face Conferences**

Tables 30 and 31 below summarize respectively the first and second week response data to a question that asked them to compare their level of participation in the MathWeb 2000 conference with their level of participation in other face-to-face conferences. The score indicated that four is high and one is low. Note that between the first and second week the mean response decreases from 2.405 to 2.308. The Likert response distribution changed from 13 percent, 30 percent, 41 percent, 16 percent for four, three, two, and one respectively for the first week to 11 percent, 31 percent, 35 percent, 23 percent for four, three, two, and one respectively for the second week.

The comparison of the two weeks' frequency response percentage in Table 32 below shows a slight decrease from 13 percent to 11 percent in the highest category (i.e., Likert 4), and shows a slight decrease from 43 percent to 42 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3).

These scores indicate that the majority of respondents did not feel that they interacted more in this environment but did interact in about the same way that they did in a face-to-face environment.

**Table 30: Respondent's Level of Participation as Compared to Face-to-Face Conferences: First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
2.405	5	11	15	6	6
Percent	13	30	41	16	

**Table 31: Respondent's Level of Participation as Compared to Face-to-Face Conferences: Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
2.308	3	8	9	6	4
Percent	11	31	35	23	

**Table 32: Respondent's Level of Participation as Compared to Face-to-Face Conferences: First and Second Week Survey Comparison**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
<b>1<sup>st</sup> Week</b>	2.405	13	30	41	16
<b>2<sup>nd</sup> Week</b>	2.308	12	31	35	23

## **What Would Encourage More In-depth Interaction and Learning?**

Table 33 lists the qualitative responses to the question of what would encourage more in-depth interaction and learning. The table indicates the survey week, and assigns a category to the response. Response groups are assigned broad categories. There were 32 qualitative responses to this question which included 16 in the first week survey and 16 in the second week survey.

Table 34 summarizes the number of responses in each response category by survey week. First week responses were predominantly concerned with the interaction techniques used and the conference format. Second week responses became much more specific with respect to the need to garner more time for interaction—both from improvement in the format of the conference and from better time management by the respondent.

**Table 33: What Would Encourage More In-depth Interaction and Learning?  
First and Second Week Survey Response**

<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
Make it a month long as we have had technological problems in our building with the implementation of Win 2000 and haven't had access at times so I feel I missed out.		1. Longer Conference
The workshops and main presentations are geared at a higher level.	Tough to say, it depends upon what the other participants bring up. Tough to react if things aren't brought up for appropriate levels.	1&2.Improved Interaction Technique
	More time available	2. More Personal Time
	More time to interact but that is not the fault of MathWeb 2000. I spend most of my day in classrooms and internet is in the office.	2.More Personal Time
	I need more time	2. More Personal Time
	If I had more time!	2. More Personal Time
	I guess I need more time to get on line.	2. More Personal Time
	More time to spend on line.	2. More Personal Time
	Setting aside time to do the conference. Without that I was able to browse the conference a bit at a time but never had time set aside to go into depth respond etc.	2. More Personal Time
	I find small group synchronous online conferences to be more engaging for interaction. This asynchronous conference was very informative but with so much information to digest I found very little time to respond.	2. More Personal Time
	Having it available for a longer period of time.	2. Longer Conference

First Week of Response	Second Week of Response	Response Group
	My own willingness to participate. I found the subject matter worthwhile and got a lot out of reading responses.	2. Improved Interaction Technique
Posing a question now and then instead of just asking for reactions		1. Improved Interaction Technique
Unsure of how to best utilize the conference. Felt like I was reading the same things every time I logged in. Conference site was intimidating.		1. Improved Interaction <u>Technique</u> 1. Site intimidating
I still do not quite get the procedure of the conference. I spend a lot of time in the Poolside Café interacting with other educators.		1. Improved Interaction Technique
Navigating was cumbersome did not have feeling of interfacing.		1. Improved Interaction Technique
I'm so new to this type of conference and lack of time on my part has caused me not to be as involved as I would like.	Note that this is my fault and not the fault of the presenters. I have been able to do this only at strange times and have not submitted comments on some issues.	1&2. Improved Interaction <u>Technique</u> 1&2. More Personal Time
I'm unused to conferencing this way and unsure how to jump in. I am familiar with the technological part.	Nothing you would do would make the difference. This has been a very busy two weeks for me.	1. Improved Interaction <u>Technique</u> 2. More Personal Time
Not Sure	Don't worry about it. I get the content I need and ask questions only if I want more than was presented.	1&2. Improved Interaction Technique
Unable to answer 2 since I haven't be able to online enough	Wish I knew.	1&2. Improved Interaction Technique
Nothing really. I personally need to feel more comfortable with a (for me) new concept.	I didn't participate as much as I had planned and although I didn't attend as much as I would have liked just having accessibility and getting the follow up CD will be invaluable.	1&2. Improved Interaction <u>Technique</u> 2. More Personal Time

First Week of Response	Second Week of Response	Response Group
Since this is a very busy time of year my time has been limited.		1. More Personal Time
Having no experience quite like this I'm not sure I really understand how to participate in meaningful ways.		1. Improved Interaction Technique
Hard to say I'm not the type to walk up to presenters at a face-to-face conference either.		1. Improved Interaction Technique
This is my fault. At a conference I am a captive and in this setting I am wrapped in today's business not the conference.		1. Improved Interaction Technique 1. Hard to Focus
Time. I haven't had time to get online to use it yet. I'm also working on a tech grant for computer equipment. I'm doing most of this conference at home and of course that cost me more. I haven't had time to really figure out how to get around.		1. Improved Interaction Technique 1. More Personal Time

**Table 34: What would encourage more in-depth interaction and learning?  
Response Group Summary Survey Question**

Response Group	First Week of Response	Second Week of Response
Improved Interaction Technique	14	6
More Personal Time	3	10
Longer Conference	1	1
Hard to Focus	1	
Site Intimidating	1	

### **Three Weeks is a Good Time Length for MathWeb 2000?**

Tables 35 and 36 summarize respectively the first and second week response data to a question which asked if three weeks is a good length of time for MathWeb 2000. The scoring indicated that four is high and one is low. Between the first and second week the mean response increased slightly from 3.256 to 3.259. The Likert response distribution changed from 57 percent, 23 percent, ten percent, ten percent for four, three, two, and one respectively for the first week to 52 percent, 30 percent, 11 percent, seven percent for four, three, two, and one respectively for the second week.

The comparison of the two weeks' frequency response percentage in Table 37 shows a decrease from 57 percent to 52 in the highest category (i.e., Likert 4), but shows a slight increase from 80 percent to 82 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3).

These scores indicate that the respondents did like the three week format. Based on the number of respondents who indicated that they had problems allocating enough time to work with the site, a four week format would be appropriate. There was no indication that respondents wanted a shorter time.

**Table 35: Three Weeks is a Good Time Length for MathWeb 2000?  
First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.256	22	9	4	4	4
Percent	57	23	10	10	

**Table 36: Three Weeks is a Good Time Length for MathWeb 2000?  
Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.259	14	8	3	2	3
Percent	52	30	11	7	

**Table 37: Three Weeks is a Good Time Length for MathWeb 2000?  
First and Second Week Survey Comparison**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
<b>1<sup>st</sup> Week</b>	3.256	57	23	10	10
<b>2<sup>nd</sup> Week</b>	3.259	52	30	11	7

### **Ability to Easily Find Conference Instructions, Sessions, and Workshops**

Tables 38 and 39 summarize the first and second weeks respectively, response data to a question which asked about the respondents' ability to easily find conference instructions, sessions, and workshops. The scoring indicated that four is high and one is low. Between the first and second week the mean response increased from 3.256 to 3.407. The Likert response distribution changed from 62 percent, ten percent, 20 percent, eight percent for four, three, two, and one respectively for the first week to 67 percent, 18 percent, four percent, 11 percent for four, three, two, and one respectively for the second week.

The comparison of the two weeks' frequency response percentage in Table 40 shows an increase from 62 percent to 67 percent in the highest category (i.e., Likert 4), and shows a larger increase from 72 percent to 85 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3).

These scores indicate that there was an increase in the respondent's skill level and comfort level while navigating the MathWeb 2000 Web site.

**Table 38: Ability to Easily Find Conference Instructions, Sessions, and Workshops: First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.256	24	4	8	3	4
Percent	62	10	20	8	

**Table 39: Ability to Easily Find Conference Instructions, Sessions, and Workshops: Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.407	18	5	1	3	3
Percent	67	18	4	11	

**Table 40: Ability to Easily Find Conference Instructions, Sessions, and Workshops: First and Second Week Survey Comparison**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
<b>1<sup>st</sup> Week</b>	3.256	62	10	20	8
<b>2<sup>nd</sup> Week</b>	3.407	67	18	4	11

### **Ability to Download, Upload and Save Wanted Material**

Tables 41 and 42 summarize respectively the first and second week response data to a question that asked respondents were able to download, upload and save material that they wanted. Scoring indicated that a four is high and a one is low. Between the first and second week the mean response increased from 3.108 to 3.308. The Likert response distribution changed from 51 percent, 14 percent, 30 percent, five percent for four, three, two, and one respectively for the first week to 50 percent, 35 percent, 11 percent, four percent for four, three, two, and one respectively for the second week.

The comparison of the two weeks' frequency response percentage in Table 43 below shows a slight decrease from 51 percent to 50 percent in the highest category (i.e., Likert 4), while showing a large increase from 65 percent to 85 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3).

These scores indicate that there was an increase in the respondent's skill level and comfort level in using the MathWeb 2000 Web site and saving resource materials that they felt were useful.

**Table 41: Ability to Download, Upload and Save Wanted Material:  
First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.108	19	5	11	2	6
Percent	51	14	30	5	

**Table 42: Ability to Download, Upload and Save Wanted Material:  
Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.308	13	9	3	1	4
Percent	50	35	11	4	

**Table 43: Ability to Download, Upload and Save Wanted Material:  
First and Second Week Survey Comparison**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
<b>1<sup>st</sup> Week</b>	3.108	51	14	30	5
<b>2<sup>nd</sup> Week</b>	3.308	50	35	11	4

## **MathWeb 2000 Is Meeting Expectations**

Tables 44 and 45 summarize respectively the first and second week response data to a question that asked if MathWeb 2000 was meeting the respondent's expectations. Between the first and second week the mean response increased from 3.184 to 3.185. The Likert response distribution changed from 42 percent, 42 percent, eight percent, eight percent for four, three, two, and one respectively for the first week to 41 percent, 41 percent, 14 percent, four percent for four, three, two, and one respectively for the second week. Four is high, and one is low.

The comparison of the two weeks' frequency response percentage in Table 46 below shows a slight decrease from 42 percent to 41 percent in the highest category (i.e., Likert 4), and shows a slight decrease from 84 percent to 82 percent in the aggregate frequency response percentage for the two highest categories (i.e., Likert 4 and 3).

These scores indicate that the respondents had a strong feeling that the MathWeb 2000 conference met their expectations and continued that feeling well past the mid-point of the conference.

**Table 44: MathWeb 2000 Is Meeting Expectations: First Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	2	1	
3.184	16	16	3	3	5
Percent	42	42	8	8	

**Table 45: MathWeb 2000 Is Meeting Expectations: Second Week Survey**

	Responses	Responses	Responses	Responses	Missing Responses
Mean	4	3	3	1	
3.185	11	11	4	1	3
Percent	41	41	14	4	

**Table 46: MathWeb 2000 Is Meeting Expectations:  
First and Second Week Survey Comparison**

	Mean	4 % of Respondents	3 % of Respondents	2 % of Respondents	1 % of Respondents
<b>1<sup>st</sup> Week</b>	3.184	42	42	8	8
<b>2<sup>nd</sup> Week</b>	3.185	41	41	14	4

## **Time Spent Online and Offline for MathWeb 2000**

Respondents were asked how much time they spent online and offline for MathWeb 2000. No specific activities were suggested.

For the first week, 35 educators responded (eight missing responses). The mean time reported for working online at the end of the first week was 5.143 hours.

For the first week, 22 educators responded (21 missing responses). The mean time reported for working offline at the end of the first week was 2.455 hours.

The total mean time for online and offline activities was about 7.5 hours.

For the second week, 23 educators responded (seven missing responses). The mean time reported for working online at the end of the second week was 7.013 hours.

For the second week, 16 educators responded (14 missing responses). The mean time reported for working offline at the end of the second week was 3.375 hours.

The total mean time for online and offline activities was about 10.5 hours.

The increase in time spent with MathWeb 2000 from the first to second weeks indicates a strong involvement with the seminar. If the respondents had attended a face-to-face conference, they would have spent more time during one week. A three day conference might involve participants in eight hour days for a total of 24 hours. Travel time, lodging, per diem and the costs of a substitute for the teacher add significantly to the cost in time and money for a teacher to attend a conference. The teacher's salary also continues. Travel time could add two more days.

In the case of an online conference, none of the expenses are incurred except the registration fee. All other costs are avoided and the teacher is attending the conference on his or her own time.

### **Length of Time to Develop Comfort Level with Web Environment**

First and second week surveys asked respondents how many days they logged on to the MathWeb 2000 Web site before they felt comfortable with the environment. For the first week survey, 28 educators responded (15 missing responses). The mean days reported before feeling comfortable with the environment was 1.464.

For the second week survey, 22 educators responded (eight missing responses). The mean days reported before feeling comfortable with the environment was 1.3.

These scores indicate that very little time was necessary to develop a level of comfort.

### **Respondents Computer Systems**

A question was asked on the first and second weeks surveys about the computer systems that respondents used. For the first week survey, 40 educators responded (three missing responses). Twelve of the respondents (30 percent of those responding) reported using Macs, and 28 of the respondents (70 percent of those responding) reported using PCs.

For the second week survey, 27 educators responded (three missing responses). Eight of the respondents (30 percent of those responding) reported using Macs, and 19 of the respondents (70 percent of those responding) reported using PCs.

## **Computer Model Used by Respondents**

The qualitative answers to this question were extremely varied and did not lead to clear categories. For example, some respondents used the brand name of their computer, some used processor description, and some used a more generic description, such as "Power PC." Accordingly, it is impossible to accurately break down the list into meaningful comparisons. The complete list of reported "Computer Model" is shown in Table 47.

A generalization that can be made from the reported data is that it appears the majority of MathWeb 2000 survey respondents are using computers that are utilizing processors that were manufactured within the last three years (i.e., speeds of 350 MHz or better).

For the first week survey 32 educators responded to this question (11 missing responses). For the second week survey 22 educators responded to this question (eight missing responses).

A conclusion that can be drawn is that any form of learning environment that is to be accessed online must be cross platform. The same abilities and tools must be available to all platforms.

**Table 47: Computer Models Used by Respondents:  
First and Second Week Survey Responses**

<b>Computer Models Reported by First Week Survey Respondents</b>	<b>Computer Models Reported by Second Week Survey Respondents</b>
IBM Thinkpad	Dell
iMac	GS 3
digital/dell	UMAX
generic	Pentium III 550 mhz
Dell	G3
Proteva	Pentium III
Compaq Presario 1685	G3
iBook	Gateway 2000
G3 Powerbook also Dell PC	Proteva
G3 Laptop	8600
pentium III	Dell
Custom	Micron
PowerMac 6400	AOC Spectrum 5Vlr
G3	G3
P3 700 MHZ	G3
GP350	Gateway 2000
Gateway Essential	IBM Thinkpad
PowerPC	DakTech
Pentium III 550 mhz	Micron Millennia Lxa
Gateway 2000	custom
IBM PC 330GL	G3
AOC Spectrum 5Vlr	iMac
G3	
Gateway 2000	
Micron Millennia Lxa	
Dell GX110	
Dell	
Dell	
iBook	
iBook	
dell	
imac	

## **Internet Connections**

First and second week surveys asked a question about the type of access the respondents had to Internet. For the first week survey, 31 educators responded (12 missing responses). Fourteen (or 45 percent) of those indicated they used a 56K connection, one (or three percent) indicated using a 90K connection, three (or ten percent) indicated using a cable connection, two (or six percent) indicated using a DSL connection, and 11 (or 36 percent) indicated using a T-1 connection.

For the second week survey, 12 educators responded (18 missing responses). Eleven (or 92 percent) of those indicated they used a 56K connection, and one (or eight percent) indicated using a 90K connection. (See Table 48.)

These responses indicate that materials will need to continue to be prepared for the full range of connectivity. This has implications for video streaming, download sizes and simulations. The number of respondents with high speed access (cable, DSL, T1) was higher in the first week. This is a national trend and it is important that materials be provided that utilize the speed. The technology is constantly improving and education venues should push to use the technology rather than reducing capabilities to meet the needs of those with the least capacity. Those with broadband capacity should not have less because others have less capacity.

Until everyone has broadband capacity, materials should be produced for all connectivity speeds so that no user is treated unequitably.

**Table 48: Internet Connections:  
First and Second Week Survey Responses**

<b>Internet Connection</b>	<b>First Week Number of Respondents</b>	<b>First Week % of Respondents</b>	<b>Second Week Number of Respondents</b>	<b>Second Week % of Respondents</b>
<b>56K modem</b>	14	45	11	92
<b>90K modem</b>	1	3	1	8
<b>Cable modem</b>	3	10		
<b>DSL line</b>	2	6		
<b>T1 line</b>	11	36		
<b>Total Responses</b>	31		12	

## **What Else Can MathWeb 2000 Planners Do to Make the Conference a Worthwhile Experience for Respondents**

Table 49 lists the qualitative responses to a question that asked what else MathWeb 2000 planners could do to make the conference a worthwhile experience for respondents. The table indicates the survey week, and assigns a category to the response. Response groups are broad. There were 28 qualitative responses to this question—18 in the first week survey and ten in the second week survey.

Table 50 summarizes the number of responses in each response category by survey week. First week critical responses were predominantly concerned with the organization of the conference and the broadcast of advance information concerning the scheduling and mechanics of the conference. Second week responses covered the same areas.

**Table 49: What Else Can MathWeb 2000 Planners Do to Make the Conference a Worthwhile Experience for Respondents: First and Second Week Survey Response**

<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
I think I need to spend more time reading. Maybe if it was held during the summer I would have more time to spend.	Maybe record how long we are logged on?	1. More Personal Time 1. Change Date to Summer 2. Track time
Give certificates of participation.	Make it a little longer in time.	1. Award certificates 2. Longer Conference
Encourage people to stay on the topic and not just ask a question pertinent to their own needs. Those conversations need to be done on other Web sites.	Separate the discussions from conference attendees from the materials and lectures of the experts. This would allow me to read the non-expert messages or focus entirely on the experts. Not all that the participants post is of value.	1. Improved Interaction Technique 2. Improved Interaction Technique
Send me daily emails to remind me to log in.	Send the CD as soon as possible.	1. Daily Reminders to Log On 2. Send CD
	Make it a permanent Web site with an annual membership fee	2. Officially Organize Site and Services
It took me a little while to get comfortable. I still don't have the details down but found a tremendous amount of material.		1. Provide Navigation Training
Separate the participants' comments from the expert information. I did not find all the comments relevant although I did learn from the panelists and keynoters. I would be able to sort out what I wanted easier if there was an easy-to-see grade level discussion.		1. Improved Interaction Technique
A tutorial on how to use the conference. The help was more confusing. I really don't feel I used the conference to its potential.		1. Provide Navigation Training 1. Improve Help Desk

<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
More links to books at the book store. The best workshops include the downloadable stuff. Just like any conference We Want Free Stuff.		1. Provide More Resources 1. Provide Free Resources
By all means do this next year and advertise heavily.	A users guide that explains it for the first time conference user.	1. Hold a Conference Next Year 2. Create a Users Guide for First Timers
Give some kind of info that the conference had started. I put the dates on my calendar when I registered but never got any feedback about how to get in.		1. E-mail Conference has Started
I am not sure. Perhaps post instructions by email to explain just what is going to happen before the conference starts.		1. Create a Users Guide for First Timers
I'm happy with it so far.	You have done a remarkable job. I have shared my experience with other math educators while at another meeting this past weekend.	1. No changes required 2. No changes required
Just continue the wide range of topics/speakers.	It has been a great experience. I especially like the fact I can print out information so I can read it in the evening when distractions are minimized. It has been worthwhile. I like the concept.	1. No changes required 2. No changes required
Nothing, it has been great so far.	Plan a similar conference for next year.	1. No changes required 2. Hold a conference next year
This is a good experience.		1. No changes required
It is worthwhile and I like the format.		1. No changes required

First Week of Response	Second Week of Response	Response Group
	<p>I'm very bothered by the length of text lines. They are very hard to read. They are so long that to read very well they need to be downloaded, reformatted, and then shortened with bigger type. I know that I'm getting older but this really bothers me.</p>	<p>2. Improve Format for Reading</p>
<p>Nothing. So far MathWeb 2000 has been great. I plan on revisiting the websites given as well as looking at some of the material in greater depth. I wish I had more time to devote to MathWeb 2000. I expect it to continue.</p>		<p>1. No changes required 1. More Personal Time</p>
<p>Please give me more time to think about this.</p>		<p>1. More Personal Time</p>

**Table 50: What Else Can MathWeb 2000 Planners Do to Make the Conference a Worthwhile Experience for Respondents:  
Response Group Summary Survey Question**

<b>Response Group</b>	<b>First Week Number of Responses in Response Group</b>	<b>Second Week Number of Responses in Response Group</b>
No Changes Required	6	2
More Personal Time	3	
Change Date to Summer	1	
Track Time		1
Award Certificates	1	
Longer Conference		1
Improved Interaction Technique	3	1
Send CD		1
Daily Reminders to Log on	1	
Officially Organize Site and Services		1
Provide Navigation Training	1	
Improve Help Desk	1	
Provide More Resources	1	
Provide Free Resources	1	
Hold a Conference Next Year	1	1
Create a Users Guide for First Timers	1	1
E-mail Conference Has Started	1	
Improve Format for Reading		1

## **What Is Positive and/or Negative About MathWeb 2000**

Table 51 lists the qualitative responses to a question that asked respondents what they found positive and/or negative about MathWeb 2000. The table assigns a positive or negative label, indicates the survey week, and assigns a category to the response. Response groups are broad in meaning. There were 41 qualitative responses to this question—25 in the first week survey and 16 in the second week survey.

Table 52 summarizes the number of responses in each response category by survey week. First and second week responses predominantly praised conference features and issues arising primarily from the format of the conference, and the opportunity for interaction with other professionals with similar interests.

The 25 first week responses were broken down and resulted in 30 positive and 14 negative responses. The 16 second week responses were broken down and resulted in 27 positive and six negative responses. The total for both weeks was 57 positive responses and 20 negative responses.

**Table 51: What Is Positive and/or Negative About MathWeb 2000:  
First and Second Week Survey Response**

<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
Positive, how nice to use technology that works! No down time, no problems so far!	Positive, I like the comments and introductions. I also particularly liked the panel discussions though I have not posted comments. I have read many.	1. Positive – Working Technology 2. Positive - Introductions 2. Positive – Panel Discussions
Negative, in an on the ground conference it is nice to get away. This format requires more of your own time.	Positive, the availability to learn from discussions from national mathematics educators on relevant topics to my position.	1. Negative – Used Personal Time 2. Positive – National Experts 2. Positive – Relevant Topics
Positive, good source of resources. Nice Website. Negative, I was offended by the negative article about the Texas system. Most states are following the same model. Why single out Texas unless it was politically motivated? Also most math teachers have no control over the state.	Positive, the positive experience of having such knowledgeable speakers as well as the opportunity to download some materials.	1. Positive – resources 1. Positive – Good Website 1. Negative -Texas Article 2. Positive National Experts 2. Download Materials
Positive, being able to visit any time it is convenient for me.	Positive, very effective means for delivering content and allowing for responses to material	1. Positive – 24/7 Convenience 2. Positive – Effective Delivery 2. Positive - Interaction
Positive, it really is all positive. I can't think of anything negative. This is a great way to have a conference. No travel, no airports, no hotels. Thank you for doing this!	Positive, I can go to site anytime. I can also download the information and there are many Internet sites cited that will be good to explore later. This is a work in progress on my part.	1. Positive – No Negatives 1. Positive – No Travel, airports, hotels 2. Positive -24/7 Convenience 2. Positive - Download Materials 2. Positive - Resources

<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
Positive, I like the format and being able to refer back to topics discussed	Negative, somewhat geared to upper levels is a negative. Positive, getting a CD of the conference is a positive. I can share it with my administration.	1. Positive – Format 1. Positive – Review Materials 2. Negative – For Upper Levels
Positive, I like the innovative way of delivery. Negative, I just need more time to explore and become comfortable	Negative, frustrated as I keep finding the same things over and over. I have a difficult time finding what is available.	1. Positive - Format 1. Negative – Needs Time 1. Negative – Feels Uncomfortable in format 2. Negative- Navigation Problems
Negative, after I registered I never received any follow up info about this. I assumed then that the supposed conference was a scam put forth by someone who had gotten the mail list of NCSM. I do not have the address to go in.	Positive, I like the fact that the keynote speaker's notes are on paper and it is great to resource them again.	1. Negative –Start Notification 1. Negative – Scam on NCTM Mailing List 1. Negative – No Site Address 2. Positive - Speakers Notes on File
Positive, I find it convenient to attend when it is convenient for my schedule	Positive, the ability to participate at one's own pace and time.	1. Positive – 24/7Convenience 2. Positive 24/7 convenience 2. Positive – Work at Own Pace
Negative, see above about giving personal info to vendors.	Negative, I still find it hard to set aside the time to really take advantage of the conference. Positive, it is certainly much cheaper and less disruptive than traveling. These are the main pros and cons that I found	1. Negative - Don't Pass Names to Vendors 2. Negative – Needs Time 2. Positive – Economical 2. Positive - No Travel Disruption

<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
Positive, good to see comments coming from all over the country.	Positive, interaction ability to read thoughts of people internationally material presented in workshops useful and relevant links are useful poolside café interesting, quotes improvisational introductions (all of the café actually) ability to connect with people	1. Positive – National Participants 2. Positive-Interaction 2. Positive-Resources 2. Positive - Poolside for People Connections
Negative, people involved in the conversation are not as sophisticated about mathematics and assessment as I expected.	Positive, it gave you the opportunity to attend every workshop and every panel discussion to interact with others on a purely professional level to interact with anyone easily from the workshop coordinators to the participants.	1. Negative – Participants Aren't Meeting Expectations 2. Positive – Can Attend Everything 2. Positive – Interaction
	Positive, all positive.	2. Positive – All Positive
	Positive, I like seeing the views and reactions among the presenters and participants. Negative, I was unhappy with the redundancy of postings in different areas and the lack of focus of some of the sessions/areas.	2. Positive – Interaction 2. Negative – Posting Duplicates 2. Negative – Lack of Focus in Some Sessions
Positive, the interaction between participants. The workshops have been interesting and I enjoy getting and seeing responses to questions that others or I have asked.	Positive, I enjoyed seeing what other teachers are doing. Negative, I just don't have enough time to be on line like I would like.	1. Positive – Interaction 1. Positive – Topics 1. Seeing Question Responses 2. Positive – Seeing Peers' Work 2. Negative – no Time.
Positive-the questions other participants were asking. Negative-I'm not sure what to ask or say to participate.		1. Positive – Interaction 1. Negative – How Do I Participate

<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
Positive, all positive and I wish I could be online more. However being able to access via CD and Web links will be great.		1. Positive- All Positive. 1. Negative – Needs Time 1. Positive- All Positive. 1. Negative – Needs Time
Positive, the exchanges. I thought in week two there was much more playfulness in the back and forth responses which I found entertaining		1. Positive – Interaction
Positive, great format good opportunity for communication		1. Positive – Interaction 1. Positive - Format
Positive, excellent instructors with a wealth of information to share.		1. Positive – National Experts
Positive, One thing I really like is the idea of teachers all around the world participating.		1. Positive – Interaction 1. Positive – International Participation
Positive, I enjoy interacting with the other participants from all over the country.		1. Positive – Interaction 1. Positive – International Participation
Positive, You can stay at home access the conference at a convenient time to you and participate in all of the activities at your own pace. There is that sense of autonomy. There is opportunity for a high level of interaction and sharing of ideas and thoughts.		1. Positive - 24/7 Convenience 1. Positive – Work at Own Pace 1. Positive - Interaction 1. Positive – High Level Interaction
Negative, still not sure about checking off stuff etc. but give me one more day and I'll get the hang of it.		1. Negative – Navigation Problems
Positive, being able to not have to re-read sections I have already read.		1. Positive - Tracking What I've Read

<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
Negative, it was hard for me at first to figure out what I needed to do to access the conference		1. Negative – Problems Accessing Conference
I heard about this via my NCTM membership. It really wasn't what I was expecting.		1. Negative – Did Not Meet Expectations

**Table 52: What Is Positive and/or Negative About MathWeb 2000:  
Response Group Summary**

<b>Response Group</b>	<b>First Week Positive Negative</b>	<b>Second Week Positive Negative</b>	<b>Total Response Positive Negative</b>
All Positive & No Negatives	3P	1P	4P
Working Technology	1P		1P
Problems Accessing Conference	1N		1N
No Start Notification or Site URL	2N		2N
Format & Effective Delivery	3P	1P	4P
Feels Uncomfortable In Format	1N		1N
How Do I Participate	1N		1N
Good Website	1P		1P
Introductions		1P	1P
Poolside for People Connections		1P	1P
Interaction & High Level Interaction	8P	4P	12P
Seeing Peers' Work		1P	1P
Seeing Question Responses	1P		1P
National Experts	1P	2P	3P
Panel Discussions		1P	1P
24/7 Convenience	4P	3P	7P
Can Attend Everything		1P	1P
Work at Own Pace	1P	2P	3P
Used Personal Time	1N		1N
Needs Time	3N	2N	5N
Topics & Relevance	1P	1P	2P
Resources	1P	2P	3P
Download Materials		2P	2P
Negative -Texas Article		1N	1N
No Travel/airports/hotels & No Travel Disruption	1P	1P	2P
Economical		1P	1P
Review Materials	1P		1P
For upper levels		1P	1P
Speakers Notes on File		1P	1P
Navigation Problems	1N	1N	2N
Don't Pass Names to Vendors	1N		1N
National/International Participants	3P		3P
Participants Aren't Meeting Expectations	1N		1N
Lack of Focus in Some Sessions		1N	1N
Tracking What I've Read	1P		1P
Posting Duplicates		1N	1N
Did Not Meet Expectations	1N		1N
Scam on NCTM Mailing List	1N		1N
Totals	30P 14N	27P 6N	57P 20N

### **Plans for MathWeb 2001 that Differ from MathWeb 2000**

Table 53 lists the qualitative responses to a question that asked if they were planning the next MathWeb 2000, what would respondents do differently. The table indicates the survey week, and assigns a category to the response. Response groups are broad in meaning. There were 23 qualitative responses to this question—13 in the first week survey and ten in the second week survey. Each response was disaggregated so that all issues could be considered.

Table 54 summarizes the number of responses in each response category by survey week. First and second week responses predominantly address conference features and issues (which arise from the organization of the conference).

**Table 53: Plans for MathWeb 2001 that Differ from MathWeb 2000:  
First and Second Week Survey Response**

First Week of Response	Second Week of Response	Response Group
Get more classroom teachers involved. Research and researchers are great. They make those of us in the classroom really think about what we are doing. Teacher presenters usually have more ideas you can walk away with and put to immediate use.	Break up by grades for example K-5-, 6-8 and 9-12. I know that information may be shared across the grades however you have to read through a lot of material to find topics pertinent to your grade level at times.	<ol style="list-style-type: none"> <li>1. Involve more teachers</li> <li>2. Do grade breakouts (label messages)</li> </ol>
Change the time line. Make it a little longer	Consider holding it in summer months so that there would be more participation time.	<ol style="list-style-type: none"> <li>1. Longer Conference</li> <li>2. Hold in Summer</li> </ol>
I would have one day of speakers followed by the next day of interaction. Conference would last longer but time constraints don't matter	I would have liked to spend more time at the conference.	<ol style="list-style-type: none"> <li>1. Alternate speakers and interaction days</li> <li>2. Longer Conference</li> </ol>
Ask for topics of interest from participants and then vase the weeks on the most popular topics	Make the directions easier. I wasn't sure how to participate.	<ol style="list-style-type: none"> <li>1. Participants generate topics</li> <li>2. Improve Interaction Directions</li> </ol>
Activities/Surveys that the conference attendees could participate in. Too many spectator attendees and active participation		<ol style="list-style-type: none"> <li>1. Activities for Participants</li> <li>1. Too many spectators – get active participation</li> </ol>
I would try to structure it more like a in-person conference with a major theme and then gear toward the teaching levels within the conference. It would also be nice to have a conference on teaching strategies. Keep up the good work. This is very worthwhile		<ol style="list-style-type: none"> <li>1. Set a Theme</li> <li>1. Set for grade levels</li> <li>1. Teaching Strategies Topics</li> </ol>
Panelists and workshop presenters could be international		<ol style="list-style-type: none"> <li>1. Use international experts</li> </ol>

<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Response Group</b>
Change the presentations to more advanced discussions		1. Increase Interaction
Give people information after the initial registration login		1. Improve Navigation
	It needs some video and some action to make it livelier. I realize that some users may not have the equipment to run this type of conference but somehow the power of the technology is not as evident as it should be.	1. Add Video 1. Increase technology uses
Make the home page easier to understand		1. Improve Navigation
	A suggestion! I really cannot think of a thing except to get the word out.	1. Good Marketing
Nothing, I just need to get used to it		1. Seamless technology for user comfort
Too early to tell since this is my first time		1. No suggestions
Not sure at this time		1. No suggestions
	I liked what was done. I have no suggestions. Sorry!	2. No Suggestions
	Nothing right now.	2. No Suggestions
	Nothing!	2. No Suggestions
	Time is my biggest problem	2. Help in managing time

**Table 54: Plans for MathWeb 2001 that Differ from MathWeb 2000:  
Response Group Summary**

<b>Response Group</b>	<b>First Week of Response</b>	<b>Second Week of Response</b>	<b>Totals in Response Group</b>
Involve More Teachers	1		1
Do grade breakouts (label message)		2	2
Longer Conference	1	1	2
Hold in Summer		1	1
Alternate speakers and interaction days	1		1
Participants generate topics	1		1
Improve Interaction Directions		1	1
Activities for Participants	1		1
Too many spectators – get active participation	1		1
Use international experts	1		1
Increase Interaction	1		1
Improve Navigation	2		2
Add Video	1		1
Increase technology uses	1		1
Good Marketing	1		1
Seamless technology for user comfort	1		1
No suggestions	2	3	5
Help in managing time		1	1
<b>Totals</b>	<b>16</b>	<b>9</b>	<b>25</b>

### **Respondents Decision to Continue Participating the Next Week of MathWeb**

Both surveys asked respondents if based on the first or second week's experiences, would they continue participating in the next week of MathWeb 2000. Thirty-nine educators responded to this question on the first week survey. Thirty-eight said yes, and one said no. Twenty-six educators responded to this question on the second week survey. All responded yes. Based on these answers, the conference continuation rate was 98 percent.

### **Mathematics Conferences Attended Each Year**

Both surveys asked respondents how many mathematics they attended each year. Thirty-five educators responded to the question on the first survey week. Nineteen educators responded to this question on the second survey week. The distribution of responses is shown in Table 55, which displays the data in "frequency" format. For example, out of the respondents completing the first and second week survey, 12 indicated they attend one math conference per year and seven indicated they attended one math conference per year in the second week survey.

**Table 55: Mathematics Conferences Attended Each Year:  
Summary of Responses**

<b>Frequency of Math Conferences Attended Each Year</b>	<b>First Week Survey Responses</b>	<b>Second Week Survey Responses</b>
0	5	3
1	12	7
2	6	6
3	5	0
4	2	2
5+	5	1

### **Date of Attendance at Last Math Conference**

Both weeks of the survey asked respondents when they last attended a math conference. Thirty-five educators responded to this question on the first survey week. Twenty-four educators responded to this question on the second survey week. The distribution of responses is shown in Table 56, which displays the data in a frequency format. For example, out of the respondents completing the first week survey, nine indicate they last attended a math conference during the second half of 2000, and out of the second week survey, five respondents indicate they last attended a math conference in 1999.

**Table 56: Date of Attendance at Last Math Conference  
Summary of Responses**

<b>Year of last math conference attended</b>	<b>First Week Survey Responses</b>	<b>Second Week Survey Responses</b>
2000 July or later	15	14
2000 January to June	9	4
1999	7	5
1998	1	0
1997 or before	3	1

### Other Education Conferences Attended Each Year

Respondents were asked on both surveys how many other education conferences they attended each year. Thirty-one educators responded to this question on the first survey week. Twenty educators responded to this question on the second survey week. The distribution of responses is shown in Table 57, which displays the data in a frequency format. Of the respondents completing the first week survey, 11 indicated they attended two other education conferences each year.

**Table 57: Other Education Conferences Attended Each Year:  
Summary of Responses**

<b>Number of other education conferences attended each year</b>	<b>First Week Survey Responses</b>	<b>Second Week Survey Responses</b>
0	7	7
1	6	7
2	11	4
3	2	0
4 or more	5	2

## How Respondents Learned About MathWeb 2000

A question asked respondents how they learned about MathWeb 2000. Forty-one educators responded to this question during the first survey week. Twenty-five educators responded to this question during the second week. The distribution of responses is shown in Table 58. It displays the data in a frequency format. Of the respondents completing the first week survey, 22 indicated they learned about MathWeb 2000 from an NCTM source. Between the first and second week surveys, 53 percent of the respondents reported learning about MathWeb 2000 from NCTM (publications, email, or web site).

**Table 58: How Respondents Learned About MathWeb 2000:  
Summary of Responses**

<b>How Respondents learned about MathWeb 2000</b>	<b>First Week Survey Responses</b>	<b>Second Week Survey Responses</b>
Friend or Colleague	3	1
NCTM	22	13
Instructor or Supervisor	3	2
Other Internet Sites	2	2
State Technology List Serv	2	1
SIMMS List Serv	1	1
PBS	2	2
Other	6	3

### **Differences Perceived by Respondents Between Weeks One and Two**

The second week survey asked a question about the differences for respondents between MathWeb 2000 weeks one and two. Table 59 lists the qualitative responses to this question and assigns a category to the response. Response groups are broad in meaning. There were 16 qualitative responses to this question. Table 60 summarizes the number of responses in each response category by survey week.

**Table 59: Differences Perceived by Respondents Between Weeks One and Two:  
Second Week Response**

<b>Response</b>	<b>Response Group</b>
The expanded discussions and in depth work on assessment. It gave me still more information to use in my methods course next semester.	2. Expanded discussion 2. In depth work on assessment
1st week - pulled up website daily. 2nd week - district was on vacation material was still there when we returned; now playing catch-up	1. Logged on daily. 2. On vacation 3. Playing catchup
I certainly was more comfortable with the overall design. I also realized I would need to download information for later reference since information is so good.	2. More comfortable 2. Download information
I had less time to spend in week two. There was more to see and do at MathWeb 2000 in week two.	2. Less time week 2 More activity week 2
I only had to read what was new not slog through everything each time. When I started I came in a few days late and there were a lot of posts to catch up on	1. Late logon, played catchup 2. Easier to keep up
Due to demands at school and family I didn't get to use it during week two. One of the benefits of for me is that it is available when I am. I am looking forward to the CD to use after the conference.	2. No time to use 3. CD should help
I had less time week two so was unable to respond but what is nice is that I can still respond to old sessions this week.	2. No time to use 3. Can respond to week 2 during week 3
I tried to get more time and I felt more comfortable logging on.	2. Allocated more time 2. More comfortable
None. I went to what interested me. It is nice not to have to rush here and there trying to get into sessions.	1-2. No differences
I was more involved in week two and enjoyed it more.	2. More involved
None	1-2. No differences
I had a little more time to participate.	2. Allocated more time
Fewer postings from participants in week	2. Fewer postings
I wasn't able to visit the site as often due to other commitments. Other than that I was impressed with the continuing quality of the sessions and the responses by the participants. The new workshops for the week were great. It is a good idea to have the....I had less time this week.	2. No time to use
The amount of information. In week two the information was just too much. I guess it was too difficult to resist the opportunity to take part in every workshop and panel discussion and to keep up with the content meaningfully.	2. Too much information
None	1-2. No differences

**Table 60: Differences Perceived by Respondents Between Weeks One and Two:  
Response Group Summary**

Response Group	N	N	T
	u	u	o
	n	n	t
	b	b	a
	e	e	l
	r	r	s
		o	i
		f	n
	R	R	R
	e	e	e
	s	s	s
	p	p	p
	o	o	o
	n	n	n
	s	s	s
	e	e	e
	s	s	
		i	r
		n	o
			u
	V	V	p
	e	e	
	e	e	
	k	k	
	1	2	
Logged on daily	1		
Late logon, played catch up	1		
Expanded discussion		1	
Independent		1	

work on assessment			
On vacation		1	
More comfortable		2	
More activity week 2		1	
More involved		1	
Download information		1	
Easier to keep up		1	
No time to use		4	
Allocated more time to use		2	
Fewer postings		1	
Playing catch up		1	

Too much information		1
CD should help		1
Can respond to week 2 during week 3		1
1-2 No differences		3

## Appendix A

### Survey Instruments

# Survey Instrument #1

Dear MathWeb Participant

MathWeb is working with The Education Coalition to evaluate MathWeb2000. The MathWeb creators believe that online conferences may be an ideal way to deliver content to math teachers who might otherwise not be able to attend conferences in distant cities.

We appreciate your willingness to help us determine how this conference is of benefit to you and what might be done to increase the benefits.

Carla Lane, Ed.D.  
Principal Evaluator  
The Education Coalition

MathWeb 2000  
Week 1 Evaluation  
November 6, 2000

Please submit this instrument by November 8, 2000

Name \_\_\_\_\_  
email \_\_\_\_\_  
School Name \_\_\_\_\_  
District Name \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
Grades taught \_\_\_\_\_  
Subjects taught \_\_\_\_\_  
Years taught \_\_\_\_\_

Where there is a scale of one to four, one is low and four is high

Low High

1a. MathWeb met my content/learning needs?

1 2 3 4

1b. The appropriateness of the level of the content

1 2 3 4

1c. What other content or information would be useful? \_\_\_\_\_

\_\_\_\_\_

2a. Amount of interaction between you and the lecturers?

1 2 3 4

2b. Amount of interaction between you and the workshop moderators

1 2 3 4

2c. Amount of interaction between you and conference moderators/directors?

1 2 3 4

2d. Overall level of interaction?

1 2 3 4

2e. My level of participation as compared to face-to-face conferences

1 2 3 4

2f. What would encourage more indepth interaction and learning? \_\_\_\_\_

\_\_\_\_\_

4a. Three weeks is a good length for MathWeb 2000

1 2 3 4

4b. Able to find the conference instructions, sessions, and workshops easily?

1 2 3 4

4c. Able to download, upload and save material the way you wanted?

1 2 3 4

4d. MathWeb 2000 is meeting my expectations?

1 2 3 4

4e. How much time did you spend on the conference online? \_\_\_\_\_ Offline?

\_\_\_\_\_

4f. How many days did you log on before you were comfortable in the environment? \_\_\_\_\_

5a. What computer system are you using? PC \_\_\_\_\_ Mac \_\_\_\_\_

5b. Computer Model \_\_\_\_\_

5c. Internet Connection 56K\_ 90K \_\_ DSL \_\_ Cable Modem\_\_ T1\_\_

6a. What else can the MathWeb 2000 planners do to make the conference a worthwhile experience for you? \_\_\_\_\_

\_\_\_\_\_

6b. What do you find positive and/or negative about MathWeb 2000?

\_\_\_\_\_

6c. If you were planning the next MathWeb, what would you do differently?

\_\_\_\_\_

6d. Based on this week's experiences, will you continue with weeks two and three of MathWeb 2000? Yes\_\_\_ No \_\_\_\_\_

7a. How many mathematics conferences do you attend each year? \_\_\_\_\_

7b. When did you last attend a mathematics conference? \_\_\_\_\_

7c. How many other education conferences do you attend each year? \_\_\_\_\_

8. How did you learn about MathWeb 2000? \_\_\_\_\_

## Survey Instrument #2

Dear MathWeb Participant

MathWeb is working with The Education Coalition to evaluate MathWeb2000. The MathWeb creators believe that online conferences may be an ideal way to deliver content to math teachers who might otherwise not be able to attend conferences in distant cities.

We appreciate your willingness to help us determine how this conference is of benefit to you and what might be done to increase the benefits.

Carla Lane, Ed.D.  
Principal Evaluator  
The Education Coalition

MathWeb 2000  
Week 1 Evaluation  
November 6, 2000

Please submit this instrument by November 8, 2000

Name \_\_\_\_\_  
email \_\_\_\_\_  
School Name \_\_\_\_\_  
District Name \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
Grades taught \_\_\_\_\_  
Subjects taught \_\_\_\_\_  
Years taught \_\_\_\_\_

Where there is a scale of one to four, one is low and four is high

Low High  
1a. MathWeb met my content/learning needs?  
1 2 3 4  
1b. The appropriateness of the level of the content  
1 2 3 4  
1c. What other content or information would be useful? \_\_\_\_\_  
\_\_\_\_\_

2a. Amount of interaction between you and the lecturers?  
1 2 3 4  
2b. Amount of interaction between you and the workshop moderators  
1 2 3 4  
2c. Amount of interaction between you and conference moderators/directors?  
1 2 3 4

2d. Overall level of interaction?

1 2 3 4

2e. My level of participation as compared to face-to-face conferences

1 2 3 4

2f. What would encourage more in-depth interaction and learning? \_\_\_\_\_

\_\_\_\_\_

4a. Three weeks is a good length for MathWeb 2000

1 2 3 4

4b. Able to find the conference instructions, sessions, and workshops easily?

1 2 3 4

4c. Able to download, upload and save material the way you wanted?

1 2 3 4

4d. MathWeb 2000 is meeting my expectations?

1 2 3 4

4e. How much time did you spend on the conference online? \_\_\_\_\_ Offline?

\_\_\_\_\_

4f. How many days did you log on before you were comfortable in the environment? \_\_\_\_\_

5a. What computer system are you using? PC \_\_\_\_\_ Mac \_\_\_\_\_

5b. Computer Model \_\_\_\_\_

5c. Internet Connection 56K\_ 90K \_\_ DSL \_\_ Cable Modem\_\_ T1\_\_

6a. What else can the MathWeb 2000 planners do to make the conference a worthwhile experience for you? \_\_\_\_\_

\_\_\_\_\_

6b. What do you find positive and/or negative about MathWeb 2000?

\_\_\_\_\_

6c. If you were planning the next MathWeb, what would you do differently?

\_\_\_\_\_

6d. Based on this week's experiences, will you continue with weeks two and three of MathWeb 2000? Yes\_\_\_ No \_\_\_\_\_

7a. How many mathematics conferences do you attend each year? \_\_\_\_\_

7b. When did you last attend a mathematics conference? \_\_\_\_\_

7c. How many other education conferences do you attend each year? \_\_\_\_\_

8. How did you learn about MathWeb 2000? \_\_\_\_\_

9. What differences were there for you between MathWeb weeks one and two?  
Insert a qualitative box.

## Appendix B

### Interaction Coding

**MathWeb 2000 Documents Interaction Coding**

**Arrival Harbor - Welcome Center**

**Welcome Center**

**Table #61: Arrival Harbor, Item 1**

Narrative	Analysis Categories	Code Line Count
Arrival Harbor Toby Sheppard Bloch (tsb), Organizer		
MathWeb 2000 Center, Arrival Harbor		
1 Welcome Center Susan Doherty (squinnxx)		
0		
2 Program-at-a-glance Susan Doherty (squinnxx)	5	
3 Getting Around--Scavenger Hunt Susan Doherty (squinnxx)		
5		
4 FAQs Susan Doherty (squinnxx)		
0		
5 Sponsors and Exhibitors Susan Doherty (squinnxx)		
0		
6 Help Desk Susan Doherty (squinnxx)	31	
7 LIVE CHAT! Susan Doherty (squinnxx)	7	

**Welcome Center**

**Table # 62: Arrival Harbor, Item 1**

Narrative	Analysis Categories	Code Line Count
Arrival Harbor Item 1 MathWeb 2000 Center Welcome Center		
Item 1 11-SEP-2000 20:40 Susan Doherty (squinnxx)		

**Welcome Center**  
**Table # 63: Arrival Harbor, Item 2**

Narrative	Analysis Categories	Code Line Count
2:2) 30-OCT-2000 14:23 John P. Nugent (nugent) Getting a feel for the format Test	Convergent response	8c-1
2:3) 08-NOV-2000 10:24 Erica Waitoller (waitoller) Hello! I am Erica and I am primary school teacher (8 years olds) at Florida Day School, Argentina. I am very interested in learning about other experiences in developing understanding of mathematical concepts and reaching or even improving our standards.	Student share experiences and/or solutions	9s-6
2:4) 17-NOV-2000 11:13 Carmen Fernandez de Tarrago (cfernandez) Hi, I am Carmen Fernandez from the Carol Morgan School of Santo Domingo. I teach Geometry and I'd like to learn techniques or hands-on strategies for teaching Geometrical concepts.	Initiated Comment	9i-5
2:5) 18-NOV-2000 00:17 Christine Palmer (cmpalmer) One of the geometry concepts that we model is the relationship between a rectangle and a parallelogram, by constructing a rectangle and then cutting a rectangle off the end and sliding it to the opposite end. We examine the area, perimeter, height, and length before and after the cut & slide.  Another that we use is having students measure the circumference of a number of "circular" items, like film canisters and cans, etc, using a tape measure. They then trace the circle on a piece of paper and cut the circle out and fold it in half to find the diameter, which they also measure. Then, they divide C/d, using a calculator. After we have repeated the process 20-30 times (each student measures at least one item), recording the data in a chart, we find the average of the C/d results. Sometimes we recalculate each time we add another item. This allows students to see that our calculation approaches pi.	Student share experiences and/or solution	9s-21
<b>Convergent response</b>		<b>8c-1</b>
<b>Initiated Comment</b>		<b>9i-5</b>
<b>Student share experiences and/or solution</b>		<b>9s-27</b>

**Welcome Center**

**Table # 64: Arrival Harbor, Item 3**

Narrative	Analysis Categories	Code Line Count
Arrival Harbor Item 3 MathWeb 2000 Center, Arrival Harbor, Item 3  Getting Around--Scavenger Hunt  Item 3 05-OCT-2000 11:45 Susan Doherty (squinnxx) Welcome to the Scavenger Hunt!	Gives directions: physical action on the part of the learner	6-1
3:1) 05-OCT-2000 11:53 Susan Doherty (squinnxx) Your first stop in the virtual Scavenger Hunt is the "Introductions" item in the Cafe.	Orientation Lecturing	50-2
3:2) 05-OCT-2000 12:11 Susan Doherty (squinnxx) Step #2: Edit Your Own Response	Gives directions: physical action on the part of the learner	6-1
3:3) 05-OCT-2000 12:22 Susan Doherty (squinnxx) Step #3: Find and Update Your Personal Profile.	Gives directions: physical action on the part of the learner	6-2
3:4) 05-OCT-2000 12:38 Susan Doherty (squinnxx) Step #4: Find and Use the Caucus Navigation Bar	Gives directions: physical action on the part of the learner	6-2
3:5) 05-OCT-2000 12:40 Susan Doherty (squinnxx) Step #5 (The Final Step): Explore More of the MathWeb 2000 site.	Gives directions: physical action on the part of the learner	6-2

**Orientation Lecturing**

**Gives directions: physical action on the part of the learner**

**50-2**

**6-8**

**Welcome Center**

**Table # 65: Arrival Harbor, Item 4**

Narrative	Analysis Categories	Code Line Count
<p>Arrival Harbor Item 4 MathWeb 2000 Center, Arrival Harbor, Item 4</p> <p>FAQs Item 4 05-OCT-2000 12:53 Susan Doherty (squinnxx)</p> <p>What is Mathweb2000? Why is assessment important? Who should attend? How much does it cost? Why does Mathweb2000 run for three-weeks? How often should I log in? What will I see and do in Mathweb2000? Who is sponsoring Mathweb2000?</p> <p>What is Mathweb2000?</p> <p>Mathweb2000 is a whole new way to communicate with your peers, share ideas, and learn from others. Mathweb2000 is not just another web site with information and simple chat. It is a unique, collaborative environment that structures online conversations that deliver rich learning experiences to participants. Much like a face-to-face conference you will have the opportunity to hear keynote speakers, and participate in panel discussions. You will also have the opportunity to share with each other in the virtual lounge, peruse the online resource center and much more.</p> <p>Why is assessment important?</p> <p>Assessment is the means by which we determine what students know and are able to do. Much attention has been given to large scale efforts on the state and district assessment of student performance. It is imperative that these "high stakes" assessments, which often have social, political, and financial ramifications, be aligned to the goals teachers are expected to achieve. In the classroom, teachers are changing the way they are obtaining evidence of their students' thinking and realize that assessment is an integral part of the teaching/learning process. Assessing throughout the learning process helps to guarantee that learning is taking place.</p>	<p>Asks Factual Questions</p> <p>Factual Lecturing</p> <p>Asks Factual Questions</p> <p>Factual Lecturing</p>	<p>4f-1</p> <p>5f-13</p> <p>4f-1</p> <p>5f-27</p>

Narrative	Analysis Categories	Code Line Count
<p>Frequent assessment throughout the lesson helps inform the teacher what students have learned and how well they have learned it. This information, in turn, helps direct the teacher in the structure, the pacing, and the form of presentation of subsequent activities. Ongoing assessment of students allows teachers to better plan, report, and communicate progress to students, parents, administrators, and other teachers. Assessment helps districts and schools to design and implement more effective curriculum.</p>		
<p>Who should attend?</p>	Asks Factual Questions	4f-1
<p>Teachers, administrators, parents, and others interested in assessment in mathematics education are welcome.</p>	Factual Lecturing	5f-3
<p>How much does it cost?</p>	Asks Factual Questions	4f-1
<p>The \$20 registration fee includes a CD containing all of the Mathweb2000 content.</p>	Factual Lecturing	5f-2
<p>Why does Mathweb2000 run for three-weeks?</p>	Asks Factual Questions	4f-1
<p>Participants attend by logging into the password protected event environment from any web browser, at any time of the day or night. Spread out over a three-week period, most sessions will be asynchronous (not everyone is attending at the same time) allowing participants to attend at any time. This will allow you to schedule when and how often you would like to attend. Presentations, questions &amp; answers, and interactive dialogue remain accessible throughout the entire event. The Caucus software remembers exactly what you've seen and what is new to you each time you log in.</p>	Factual Lecturing	5f-14
<p>How often should I log in?</p>	Asks Factual Questions	4f-1
<p>That is totally up to you and what your schedule will allow. Since it is an asynchronous event, conversations will continue when you are off-line so you may want to check back at least once a day or so to see what new information has been presented.</p>	Asks Factual Questions	5f-6
<p>What will I see and do in Mathweb2000?</p>	Factual Lecturing	4f-1
	Asks Factual Questions	5f-6

Narrative	Analysis Categories	Code Line Count
<p>Mathweb2000 will feature Phillip Daro of the New Standards project, as a keynote speaker. The event will also feature presentations, workshops, and panel discussions with researchers, administrators, supervisors, and classroom teachers.</p>	Factual Lecturing	4f-1
<p>Who is sponsoring Mathweb2000?</p>	Asks Factual Questions	5f-9
<p>Mathweb2000 is a new initiative sponsored by Hewlett-Packard, NCTM, PBS, and the NSF-funded projects Modeling Middle School Mathematics (MMM) and Show-Me Center. It is produced by Bolster Education and Group Jazz. It is designed to allow mathematics teachers to collaborate on this year's theme of assessment and to provide practical classroom applications.</p>	Factual Lecturing	

**Asks Factual Questions**  
**Factual Lecturing**

**4f-8**  
**5f-80**

**Welcome Center**  
**Table # 66: Arrival Harbor, Item 5**

Narrative	Analysis Categories	Code Line Count
<p>MathWeb 2000 Center, Arrival Harbor, Item 5</p> <p>Sponsors and Exhibitors  Item 5 05-OCT-2000 13:04 Susan Doherty (squinnxx)  We would like to thank all of the sponsors and exhibitors who have generously supported MathWeb 2000!</p>	Praises or Encourages	2-3

**Praises or Encourages**

**2-3**

**Welcome Center**

**Table # 67: Arrival Harbor, Item 6, Help Desk**

Narrative	Analysis Categories	Code Line Count
<p>Arrival Harbor Item 6 MathWeb 2000 Center, Arrival Harbor, Item 6</p> <p>Help Desk Item 6 05-OCT-2000 13:08 Susan Doherty (squinnxx) Ask a question here and we'll do our best to answer it!</p>	<p>Gives directions: physical action on the part of the learner</p>	<p>6-2</p>
<p>6:1) 30-OCT-2000 21:17 Edward M. Curran (emc) Of what value is checking boxes next to items? Not clear on "actions."</p>	<p>Convergent Response</p>	<p>8c-2</p>
<p>6:2) 30-OCT-2000 21:49 Susan Doherty (squinnxx) Checking the boxes allows you to do a few things such as move or copy items to other spaces. For example, if someone made a comment in one session that you felt was very relevant to another discussion, you could mark, and then copy that response to the other discussion. To be honest, it's not a feature that I use frequently. The system knows what you have and have not read without you marking anything.</p>	<p>Gives or asks for resources</p>	<p>5R-10</p>
<p>6:3) 31-OCT-2000 13:09 Gail Hoskins (gailhoskins) Will the CD-ROM have "everything" that is on this site? I see content things I want to capture if not. Even in the introductions, I see people I wish to connect with after this event. Will all of that be "possible" if I count on the CD-ROM? (expected delivery date??) More specifically, when this event is over, will the online part "disappear" instantly, or remain there frozen for awhile?</p>	<p>Convergent response</p>	<p>8c-9</p>
<p>6:4) 31-OCT-2000 13:17 Wilhelmina Mazza (billiemscd) Susan - I notice that the home page has been changed to include the main house and keynote speaker, but none of the links will take me to main house.</p>	<p>Evaluative response</p>	<p>9e-4</p>
<p>6:5) 31-OCT-2000 13:54 Susan Doherty (squinnxx) Gail, the CD-ROM will be a capture of this site -</p>	<p>Factual lecturing</p>	<p>5f-5</p>

Narrative	Analysis Categories	Code Line Count
<p>to include everything. A few things, such as the power point presentations may not be operable when the site is moved to CD and is no longer "live."</p> <p>As for delivery date, I'd probably stick with the standard response of 4-6 weeks. It can't be produced until the event is over, then duplicates have to be made, shipping, etc, etc.</p> <p>Billie - thank you for letting me know! I think some of the permission settings at this end might be screwy. I'm looking into it and will get it fixed fast!!</p>	<p>Factual lecturing</p> <p>Acknowledges student ideas</p>	<p>5f-4</p> <p>3a-4</p>
<p>6:6) 31-OCT-2000 13:56 Susan Doherty (squinnxx) I think I have the problem fixed. Let me know if you have trouble accessing anything.</p>	<p>Gives directions: physical action on the part of the learner</p>	<p>6-2</p>
<p>6:7) 01-NOV-2000 12:20 Susan Doherty (squinnxx) Sue...I moved your comments to the help desk. I would like to keep the workshop area for comments on the presentation content.</p> <p>I am a bit disappointed that the links in your address to the dept of Ed in Kentucky are not operational or at least I cannot access them from my computer and server. Will this change?</p> <p>Thank you, though, for pointing this out. Sheila is not responsible for making her presentation is operational, that's my role. I will work with the links in Sheila's presentation to make them more accessible.</p> <p>To all participants, please feel free to let me know here if you have trouble accessing any part of the conference. Thank you.</p>	<p>Gives or asks for resources</p> <p>Evaluative response</p> <p>Gives directions: physical action on the part of the learner</p>	<p>5R-3</p> <p>9e-4</p> <p>6-8</p>
<p>6:8) 01-NOV-2000 15:11 Susan Doherty (squinnxx) Thanks again for the catch on workshop 1. I think I've made it more accessible, so check it out and let me know!</p>	<p>Gives or asks for resources</p>	<p>5R-3</p>
<p>6:9) 02-NOV-2000 13:28 Wilhelmina "Billie" Mazza (billiemscd) Susan. - As I read people's responses, I find myself interested in knowing more about the person, and often click on their names. While there is a nice space for introduction on this</p>	<p>Student share experiences and/or solutions</p>	<p>9s-8</p>

Narrative	Analysis Categories	Code Line Count
<p>page, many haven't entered any information. Is there anyway to have the information from their introduction at Pool Side included on this page? Not a big problem, but it would be nice?</p>		
<p>6:10) 02-NOV-2000 17:32 Susan Doherty (squinnxx) That's a great idea! I'll start putting the information there, and also give people a reminder that they can update their profiles using the Profile settings link on the main page.</p>	<p>Acknowledges student ideas</p>	<p>3a-4</p>
<p>6:11) 03-NOV-2000 08:46 Craig Morgan (cmorgan) Susan, I went to my profile to change my email address, and saw an error message about street, city, country, etc. I looked on the page but there was no where to enter the missing items. Should I worry about the errors or just forget about it. Craig Morgan</p>	<p>Student share experiences and/or solutions</p>	<p>9s-6</p>
<p>6:12) 03-NOV-2000 09:37 Susan Doherty (squinnxx) Yes, thank you. We're having the real techies look into it. For privacy reasons we do not include addresses on the profile information, however, it seems that causes an error. I do have everyone's mailing information for purposes of sending the CD after the conference - probably the standard 4-6 weeks time frame.  So, yes, you can ignore the error, but it's a great idea to update your profile and add an introduction there, if you haven't.</p>	<p>Acknowledges student ideas</p>	<p>3a-11</p>
<p>6:13) 07-NOV-2000 19:17 Janet Dzienisiewski (Janet) I live and teach in New Jersey, and all teachers are required to complete 100 hours of workshops, conferences, etc over the next 5 years. For the workshops I have attended, I have received a certificate stating the hours spent at the conference. Does this conference and workshops count toward those 100 hours, and will certificates of participation be available?</p>	<p>Evaluative response</p>	<p>9e-9</p>
<p>6:14) 07-NOV-2000 22:32 Susan Doherty (squinnxx) I am working to post a certificate of participation that will be available in the last week of the conference. I've had this question a few times, but I'm still not sure how to deal with the hours issue. The conference does not</p>	<p>Gives or asks for resources</p>	<p>5R-6</p>

Narrative	Analysis Categories	Code Line Count
track time spend here. Any suggestions, anyone?		
6:15) 08-NOV-2000 18:59 Fred G. Harwood (fharwood) People would have to respond to different posts every once in a while to show that they were active learners in the conference? You can then print out some of your own time logs as a type of receipt.	Convergent response	8c-5
6:16) 08-NOV-2000 19:54 Steve Crandall (scrandall) Hello! From someone whose connection has been cut-off way too often because reading seems to have become identified as "inactivity", there should be some way to account for those who go to conferences and soak up the great ideas for use in their classrooms even if they never post up. I have checked with my county, and there is a form which requires more than a certificate of participation for inservice credit: the participant must give account of what was accomplished at the conference in log form, lines for signature of other professionals who benefited directly or indirectly from the participants application of new ideas, the materials or lessons developed and implemented as a result of the participation, and future plans. For any given activity, 60 hours is the maximum credit allowed by the state. I expect to make these hours from checking online, reading and re-reading posts, trying new ideas, tweeking rubrics and assessment activities, talking to other teachers, and posting up my thoughts occasionally. Of course, I would also like to have a certificate from Mathweb2000!!	Student share experiences and/or solutions	9s-25
6:17) 09-NOV-2000 13:22 Susan Doherty (squinnxx) Thanks for your input, Fred and Steve. I'm still mulling over ideas, though it's a tough issue as I'm sure the requirements are different everywhere.	Acknowledges student ideas	3a-4
6:18) 11-NOV-2000 13:58 Remy Tze Yin Poon (remypoan) How can I get rid of the edit icon after I post?	Student questioning another student	9Q-1
6:19) 11-NOV-2000 14:23 Lisa Kimball (Lisa) Hi Remy ... The edit icon stays there in case you want to go back and edit it later. But you're the only one who can "see" the edit icon on your posts (because only you can edit them).	Student talking to student	9t-4

Narrative	Analysis Categories	Code Line Count
6:20) 11-NOV-2000 14:49 Remy Tze Yin Poon (remypoony) thanks!	Student talking to student	9t-1
6:21) 11-NOV-2000 20:36 Mary Downey (mdowney) Hi, Mary Downey from Ohio. I also would like to receive a certificate and some way of showing that I have registered and participated in the on-line conference. I have not had the time that I would like to read and get involved but what I've seen has been beneficial to me.	Convergent response	8c-7
6:22) 12-NOV-2000 10:22 Susan Doherty (squinnxx) Great! I will have something posted in the cafe by the end of this week.  In addition, every registrant will receive a CD-ROM containing all of the presentations and conversations in Mathweb2000.	Acknowledges student ideas	3a-5
6:23) 14-NOV-2000 12:57 Elizabeth Staudenmeier (erstauden) Dear Susan, I must also account for my "time" at this conference. In our state, we must provide a certificate of attendance, a list of workshops attended, and the amount of time involved. I seem to be averaging 2 hours per workshop, to read the material, and then another couple of hours connecting with linked sites and investigating the material.  Any form of official documentation would be most appreciated. Robin	Initiated comment	9i-10
6:24) 14-NOV-2000 14:35 Susan Doherty (squinnxx) That sounds like a good estimate - that would make it between 30-40 hours if you "attend" all the sessions. Does anyone else have an estimate of time they are spending here? Then perhaps we can settle on a number and make it "official."	Asks convergent questions	4c-6
6:25) 14-NOV-2000 19:41 Mary Downey (mdowney) I wish I didn't have to go to work and then I would have more time to spend. I guess the time also depends on the rate of your modem. The 30-40 hours for the three weeks seems to be a good estimate. Thanks to all for the great info.	Student share experiences and/or solutions	9s-6
6:26) 15-NOV-2000 03:50 Christine Palmer (cmpalmer) For future reference, the Australian Association of Mathematics Teachers (AAMT) have been	Student share experiences and/or solutions	9s-9

Narrative	Analysis Categories	Code Line Count
doing an online conference for a couple of years, already. I "attended" that in July/August. This year, their software did keep track of time spent at the conference. I would imagine that is also reported for each individual as part of the CD rom. You might want to explore such an alternative for the next time.		
6:27) 15-NOV-2000 19:37 Fred G. Harwood (fharwood) Now there's a reason to get a cable modem!!! Just leave the website up and running while you read a good book and pretend to read the posts. Sounds like those that second one motion at a meeting so they can show that they attended the meeting in the minutes.	Student talking to student	9t-6
6:28) 17-NOV-2000 14:22 Gail Hoskins (gailhoskins) I noticed on the very fist page a message about "sign up for the Keep me Informed list for news about Mathweb2001 and other educational programs." But I can't find where to do that. I want to be included on that list please.	Convergent response	8c-5
6:29) 17-NOV-2000 16:16 Susan Doherty (squinnxx) Good point. The Keep me Informed list sign up is on the web site - <a href="http://www.groupjazz.com/mathweb2000/inform.html">http://www.groupjazz.com/mathweb2000/inform.html</a> I'll go ahead and sign you up, Gail.	Acknowledges student ideas	3a-4
6:30) 18-NOV-2000 18:04 Janet Dzienisiewski (Janet) Do you have a provider number that can accompany the certificate of participation? To accrue workshop hours in New Jersey, one must have the provider number to accompany the Certificate of Attendance.	Convergent response	8c-5
6:31) 19-NOV-2000 19:05 Susan Doherty (squinnxx) Thanks for the question, Janet. I've had this question from others as well. Group Jazz does not have a provider number, however, I am contacting NCTM to see if it will be possible to use their provider number. Janet, I will email you the information, if the conference closes before I get an answer.	Acknowledges student ideas	3a-7

**Acknowledges student ideas**  
**Asks convergent questions**  
**Convergent Response**  
**Evaluative response**  
**Factual lecturing**

**3a-39**  
**4c-6**  
**8c-33**  
**9e-17**  
**5f-9**

<b>Gives directions: physical action on the part of the learner</b>	<b>6-12</b>
<b>Gives or asks for resources</b>	<b>5R-22</b>
<b>Initiated comment</b>	<b>9i-10</b>
<b>Student questioning another student</b>	<b>9Q-1</b>
<b>Student share experiences and/or solutions</b>	<b>9s-54</b>
<b>Student talking to student</b>	<b>9t-11</b>

**Welcome Center**

**Table # 68: Arrival Harbor, Item 7, LIVE CHAT!**

<b>Narrative</b>	<b>Analysis Categories</b>	<b>Code Line Count</b>
Arrival Harbor Item 7 MathWeb 2000 Center, Arrival Harbor, Item 7 Resp 7 LIVE CHAT!  Item 7 14-NOV-2000 11:43 Susan Doherty (squinnxx)		
7:1) 15-NOV-2000 18:44 Susan Doherty (squinnxx)		
7:2) 15-NOV-2000 21:30 Susan Doherty (squinnxx) The live chat room will remain open for the rest of the conference. Feel free to drop in and see if any of your colleagues are signed on - or even better announce a time here that you'd like to chat and what you'd like to discuss.  I'll announce any special guests in the center page banner.	Gives directions: physical action on the part of the learner	6-7
7:3) 16-NOV-2000 09:39 Fred G. Harwood (fharwood) Susan had a thought re the chat. It seems like there is some interest in constructivist lessons by the classroom teachers. We could use the chat as a space for participants to be led through a sample lesson to experience it for themselves and to see the process modeled. I have a few that would fit under "Math Entertainment" and as an excellent springboard to trying some of it with their students. One that I'm thinking would work well in the space would be useful to teachers of Gr. 7 and up (even into college) and be fun personally for elementary teachers who are math specialists who would like to do some exploring together with some adults. Let me know if you get any response to the idea. I'm West coast, so I'm really not available until 7pm EST today or tomorrow. You've got some great people here. Maybe there is someone	Student sharing experiences and/or solutions	9s-21

Narrative	Analysis Categories	Code Line Count
else who would be a bigger draw and who could lead a similar concept.		
<p>7:4) 16-NOV-2000 14:59 Wilhelmina "Billie" Mazza (billiemscd)  Fred/Susan I'm interested in your exploration, as I like to do constructivist lesson activities with my teachers when I do inservices with them. This is always an excellent way to help them to realize that there IS another way to teach and learn. However, I will not be available to spend great periods of time at the computer during these next few days.</p> <p>Hopefully you will send your information to me - or post on the conference. Billie</p>	Convergent response	8c-10
<p>7:5) 16-NOV-2000 15:19 Fred G. Harwood (fharwood)  I can send out examples of some of the lessons but what I sense is the teachers need to know what they should be doing! What is the guide on the sides role, what should I look like, sound like, etc? That's why I thought the chat would work well.</p>	Gives or asks for resources	5R-6
<p>7:6) 17-NOV-2000 11:07 Wilhelmina "Billie" Mazza (billiemscd)  Fred. I understand your point. One of the ways to help teachers understand what they "should be doing" is via modeling. I am looking for materials of use in modeling experiences with other teachers in the school district</p>	Student talking to student	9t-5

**Convergent response**

**8c-10**

**Gives directions: physical action on the part of the learner**

**6-7**

**Gives or asks for resources**

**5R-6**

**Student sharing experiences and/or solutions**

**9s-21**

**Student talking to student**

**9t-5**

**Sponsors And Exhibitors**

**Table # 69: Sponsors And Exhibitors, Item 2**

Narrative	Analysis Categories	Code Line Count
<p>Sponsors And Exhibitors Item 2</p> <p>MathWeb 2000 Center, Sponsors And Exhibitors, Item 2, Resp 2</p>		
<p>Item 2 24-OCT-2000 14:36 Susan Doherty (squinnxx)  Say hello to Bob Mathews from MathType. Feel free to ask questions!</p>	Orientation lecturing	5O-2

Narrative	Analysis Categories	Code Line Count
<p>2:1) 02-NOV-2000 17:25 Bob Mathews (bmathews) Hi everyone, and welcome to Meet MathType. Click on the MathType icon in the Exhibit Hall to find out more, or if you have a question, head over to the Main House and enter the forum "A Conversation with Bob Mathews." Ask any question you have about MathType, or the "junior" version – Equation Editor. Enjoy the conference!</p>	Orientation lecturing	50-7
<p>2:2) 07-NOV-2000 13:55 Andrea Miller (miller) Can math-type be used or is there something else available that lets you easily create spinners for probability problems?</p>	Convergent response	8c-3
<p>2:3) 07-NOV-2000 16:36 Fred G. Harwood (fharwood) Spreadsheets turned into circle graphs?</p>	Convergent response	8c-1
<p>2:4) 07-NOV-2000 22:13 Bob Mathews (bmathews) Answer to Andrea Miller's question: "Can math-type be used or is there something else available that lets you easily create spinners for probability problems?"</p> <p>Andrea, if you mean a "dynamic" spinner, where you click and it electronically "spins," then no. MathType does not have any dynamic math capabilities. If you mean a spinner that you can print out and add your own needle that spins around, it doesn't support that either. That can be easily done with Word's draw tools.</p> <p>Think of MathType as a "mathematical word processor." MathType will typeset any mathematics you need to put into a word processing document, a presentation, or a web page.</p> <p>Thank you for your question.</p>	<p>Acknowledges student ideas</p> <p>Clarifies student ideas</p>	<p>3a-3</p> <p>3c-11</p>
<p>2:5) 07-NOV-2000 22:18 Bob Mathews (bmathews) Answer to Fred Harwood's question: "Spreadsheets turned into circle graphs?"</p> <p>Fred, thanks for your question. MathType doesn't have any spreadsheet capabilities or any computational or graphing capabilities at all. MathType is intended to typeset mathematics in word processing applications, presentation software, or on the web.</p>	<p>Acknowledges student ideas</p> <p>Clarifies student ideas</p>	<p>3a-2</p> <p>3c-6</p>

Narrative	Analysis Categories	Code Line Count
2:6) 08-NOV-2000 00:19 Fred G. Harwood (fharwood) Sorry, I meant to say to Andrea that has she tried using a spreadsheet and converted it into a circle graph, but I was racing to get to class.	Student talking to student	9t-3

<b>Acknowledges student ideas</b>	<b>3a-13</b>
<b>Clarifies student ideas</b>	<b>3a-9</b>
<b>Convergent response</b>	<b>8c-4</b>
<b>Orientation lecturing</b>	<b>5O-9</b>
<b>Student talking to student</b>	<b>9t-3</b>

### Sponsors and Exhibitors

**Table # 70: Sponsors And Exhibitors Item 4**

Narrative	Analysis Categories	Code Line Count
MathWeb 2000 Center Sponsors And Exhibitors, Item 4, Resp 9		
4:6) 02-NOV-2000 16:03 Diana Paterson (dpaterson) Hello Johnny, I am finding that "watching and listening" at this conference is fascinating. I hope we can entice teachers to enter into "this space" and ask questions about SIMMS Integrated Mathematics. Diana	Student share experiences and/or solutions	9s-5
4:7) 04-NOV-2000 15:27 Fred G. Harwood (fharwood) Hi Diana, I was given a set of your textbooks while writing for another publisher. Fascinating approaches. Has the effort been utilized anywhere else outside of Montana?	Student talking to student	9t-4
4:8) 05-NOV-2000 04:52 Daniel Lemay (lemayd) Hi everyone. My school, Oxbow High School in Bradford, VT as implemented Level 1 of SIMMS IM this year. The more I work with these materials, the more convinced I am that we made a good choice. We are having a bit of trouble with reading difficulties, but we are trying to accommodate. I have a student who has been through algebra 2 (albeit, he was not very successful at it) who is enrolled in the Level 1 course. The math is not terribly difficult for him, but you can see the light click on as begins to make connections that he has ever made before.	Student share experiences and/or solutions	9s-13
4:9) 07-NOV-2000 12:00 Lisa Shute (shutel) Hi, I am a teacher in Billings, MT. I have been	Student share experiences	9s-9

Narrative	Analysis Categories	Code Line Count
teaching SIMMS IM for the past 8 years. I love to see my students engaged in learning mathematics and understanding the application of mathematics. I believe this curriculum prepares my students to problem solve, apply mathematics to the real world, work with others, and become better at reading and writing. I couldn't teach any other way!	and/or solutions	
4:10) 08-NOV-2000 12:49 Diana Paterson (dpaterson) Hello Fred, Yes, the SIMMS Integrated Mathematics curriculum has been implemented nationally in high schools in the following states: Alaska, Arkansas, Arizona, Georgia, Massachusetts, Maine, Missouri, New Hampshire, Ohio, Oregon, Tennessee, Texas, Utah, Virginia, Vermont, and Wisconsin. It is being piloted in California, Colorado, New Jersey and Washington. If you are interested in reviewing any of our newest materials (such as supplemental materials, assessment information, curriculum toolkit, or video), please give us a call (800-693-4060). And thank you for mentioning the "fascinating approaches" in our curriculum. Here is a quote from a teacher who implements SIMMS Integrated Mathematics materials: "Students question more, think more, write more, and know more. They are learning to learn. I love teaching mathematics where students are engaged and active."	Student talking to student	9t-21
4:11) 14-NOV-2000 14:13 Glenn Allinger (allinger) Hi All, I've been "attending" the Mathweb2000 Conference from my sister's home in Concord, CA, while traveling and from my own home. The ideas have been stimulating and the interaction informative. During Gail Burrill's session on High Stakes Testing (#6 on the program) one of the respondents, Christina, wanted information on integrated mathematics programs. I took that opportunity to direct her to this SIMMS IM site in the Sponsor's Hut and also to the elementary, middle school and high school NSF funded dissemination websites. I have also learned about many valuable sources of information/ideas from others as well. I'm glad you, Diana, made the effort to inform others by providing this SIMMS IM site during this virtual conference. There are many good stories to share about the positive impact	Student share experiences and/or solutions	9s-22

Narrative	Analysis Categories	Code Line Count
of the SIMMS IM curriculum on student learning and about the re-energized teachers who implement these excellent high school materials. Thanks!		
4:12) 15-NOV-2000 21:07 Jim Willis (jwillis) Hi Diana and all.	Student share experiences and/or solutions	9s-1
4:18) 15-NOV-2000 21:15 Jim Willis (jwillis) Oooops, I don't know what happened that I got posted all of times above. What I am intending on saying is the positive impact that SIMMS has had on me, not to mention my kids. I am writing from Northfield, Vermont. We are in the second year of SIMMS. This is my 36 (or 37) year of teaching math, and I have never enjoyed it more than I am this year. After too many years of teaching Saxon I had my retirement papers written. SIMMS has caused me to feel like a beginning teacher. It is so refreshing to go into school every day and to see the kids getting it, and excited about getting it. I am convinced that SIMMS is an outstanding way to deliver math. Jim Willis	Student share experiences and/or solutions	9s-15
4:19) 15-NOV-2000 21:28 Susan Doherty (squinnxx) No problem, Jim. I edited out your repeats. That happens from time to time in this space.	Gives or asks for resources	5R-2
4:20) 16-NOV-2000 11:32 Diana Paterson (dpaterson) Good morning everyone! Thank you Jim for your enthusiastic statement of support for the SIMMS Integrated Mathematics curriculum. You share the same enthusiasm that other teachers experience when implementing this curriculum in their classrooms. I like to include teacher quotes because their experiences are so valuable. So here is another quote:  "I have many students who come to class hating math because no one has ever shown them why they need to learn it. Using SIMMS materials, I really believe my students will feel more confident about their mathematical ability and therefore learn to like (and maybe love) mathematics!"	Student share experiences and/or solutions	9s-16
4:21) 17-NOV-2000 16:07 Jim Willis (jwillis) Thanks Susan! It seems that I need kind people to look after me. I am really enjoying this sight :=)		
On to Sponsors And Exhibitors: [Pass]		

Gives or asks for resources  
 Student share experiences and/or solutions  
 Student talking to student

5R-2  
 9s-81  
 9t-25

**Main House Home**

**Table # 71: Main House Home, Opening Keynote**

Narrative	Analysis Categories	Code Line Count
Main House Home Toby Sheppard Bloch (tsb), Organizer		
1.Opening Keynote: Philip Daro Susan Doherty (squinnxx)                     31 2.Closing Keynote: Jan de Lange Susan Doherty (squinnxx)                     0 3.Panel 1: Those Dreaded Tests Kids HAVE TO Take Susan Doherty (squinnxx)   32 4.Panel 2: Classroom Assessment: Issues of Prof Development Susan Doherty(squinnxx)                     1 5.Panel 3: Classroom Assessment from the Inside Susan Doherty (squinnxx) 1 6.A Conversation with Gail Burrill: High Stakes Testing Susan Doherty (squinnxx) 0 7.A Conversation with Bob Mathews Susan Doherty (squinnxx)                     9  You may mark all the items as seen or as new; or you may manage items individually. You may also resign from this conference.	Factual lecturing	5f-19

**Factual lecturing**

**5f-19**

**Main House Home**

**Table # 72: Main House Home, Item 1, PBS MW Open Keynote**

Narrative	Analysis Categories	Code Line Count
<p>PBS MW Open keynote Philip Daro Main House Item 1 Opening Keynote: Philip Daro</p> <p>Item 1 11-SEP-2000 20:42 Susan Doherty (squinnxx) Phil Daro is the Executive Director of the California Institutes for Teacher Professional Development at the University of California. He has been Executive Director of New Standards and Director of Research and Development for the National Center on Education and the Economy. Mr. Daro's career has included his tenure as the Director of the Office of Project Development with the California Department of Education, the Executive Director of the American Mathematics Project, and Executive Director of the California Mathematics Project.</p> <p>He has been a member of the Mathematical Sciences Education Board of the National Academy of Sciences, has chaired the California Mathematics Task Force, and has served on numerous other national boards and committees.</p> <p>Explorer users will see the power point presentation in the following item. Netscape and other users will need to follow the link to view the presentation.</p>	<p>Personal lecturing</p>	<p>5P-20</p>
<p>1:1) 31-OCT-2000 00:03 Philip Daro (pdaro)</p>		
<p>1:7) 31-OCT-2000 00:40 Philip Daro (pdaro) Accountability: States Take Charge Tests designed for each state are replacing off the shelf standardized tests States want assessment systems aligned to their own standards. The strong trend is toward tests designed for each state rather than commercial off the shelf products. This has had a healthy effect on test designs. The trade offs in state political contexts differ from those in the commercial contexts. Many states have been willing to incorporate performance assessments and standards based features in their systems. Often, the actual construction and administration of the tests are by the same testing companies that sell the commercial products. These trends have made better</p>	<p>Factual lecturing</p>	<p>5f-32</p>

Narrative	Analysis Categories	Code Line Count
<p>assessments more feasible.</p> <p>At the same time, state interest in evaluating trends from year to year at the school level has led to a need for equitability of forms across years. This has put pressure on the designs to have many items of parallel structure and similar content from year to year. This makes it harder to include performance items, which by their nature are complex and unique. Using tests to make high stakes decisions about students exacerbates these pressures because it is so easy to reduce "misclassification error" by having a big pile of short items, even if the pile is a poor representation of state standards. These trends have made inaccurate but reliable assessments more feasible politically.</p>		
<p>1:8) 31-OCT-2000 00:44 Philip Daro (pdaro)  Tests are supposed to be based on state standards, but many are poorly aligned  How the Status Quo Slays the Dragons of Improvement: A Fable</p> <p>Once upon a time people decided that healthcare costs could be reduced dramatically by improving the physical fitness of children, especially reducing obesity. This job was assigned to the schools, along with a new category of funds to pay for it. To see if the program was working, the schools were required to evaluate the program objectively. The cost of evaluation competed with the cost of services, so everyone wanted to buy the cheapest acceptable evaluation.</p> <p>Two competing types of "test" contended for this purpose. The first was to weigh each student pre and post. The second was to measure each student's height. Across students, schools, school nurses (assessors), and programs there was far more consistency in the measurement of height than weight. Height was measured with more accuracy and reliability. Weight measures varied according to time of day, the characteristics of the scales used, the vision and judgment of the nurses, daily and weekly fluctuations in actual weight, and so on.</p> <p>The measurement experts liked the technical characteristics of height measures. They were</p>	<p>Factual lecturing</p>	<p>5f-62</p>

Narrative	Analysis Categories	Code Line Count
<p>more accurate and reliable. Amazingly, across the population, height was an excellent predictor of weight. Indeed, over time, height was a better predictor of weight than weight itself!</p> <p>The Boards overseeing the programs were impressed. They were very pleased about the price as well - height measures were so much cheaper!</p> <p>The people running the programs thought that height made no sense as a measure for accountability purposes. They wanted weight to be the measure. "How can you hold us responsible for height? Why don't you measure what we are responsible for?" But they were rebuked for favoring more subjective, expensive methods. Why, recent studies even showed that changes in height predicted changes in weight. The more accurate and cheaper height, a good predictor of weight, was selected as the score that mattered. Lo and behold, the programs had no detectable impact. In fact, the best predictor for effective programs was the height of the students parents. In the end, it was decided that little could be accomplished and physical fitness for children was dropped from the agenda. Even the parents and children were convinced that their was little they could do, so why put any effort into it. And the status quo lived happily ever after.</p>		
<p>1:9) 31-OCT-2000 00:44 Philip Daro (pdaro) States attach high stakes to results for schools and students. Our economic competitors overseas have had such systems for years - even decades. We should not act like we have to invent something whole cloth for each state. Indeed, we should benchmark our system against the finest in the world. These include those in Singapore, Japan, and Europe, as well as some states with the highest NAEP scores. In different ways, each of these systems has succeeded by building at least five necessary features into their system:</p> <p>1. Good quality assessments adequately sample each part of well described</p>	Factual lecturing	5f-44

Narrative	Analysis Categories	Code Line Count
<p>expectations for what students should learn. Exams are complemented by required coursework appropriate to the subject.</p> <p>2.Exams are fair. Students know what they have to study for the exams. There is often an exam syllabus and public availability of exams from previous years to make expectations concrete. They know what they are supposed to learn and if they have learned it they know they will do well because the exams are fair.</p> <p>3.The public accepts and supports the assessment system as fair and accurate.</p> <p>4.Teachers play a professional role in the ongoing operation of the assessment system at regional, state or national levels, including participation in scoring regimes that go beyond the classroom walls. Student papers are scored by someone other than the student's own teacher. Teachers as a professional community take pride in the accountability system, it is part of the quality assurance that gives status to their profession and adds value to what they have to offer students. Teachers who are the front line managers take pride in making the system work.</p> <p>5.The accountability system is monitored, problems are spotted and analyzed, solutions are developed and the system is improved. Complex systems operating under market pressures evolve or fail.</p>		
<p>1:10) 31-OCT-2000 00:45 Philip Daro (pdaro) More efficient ways to raise scores than teaching mathematics</p> <p>When stakes are attached to results for schools or students or teachers, the stakeholders pursue their own interests as they would in any market system. Stakeholders look for efficient ways to raise scores, even if these ways have high but unmeasured costs. Successful systems have mechanisms for spotting trouble and adapting the system before too much damage is done. This monitoring and self correcting function must focus on solving educational problems, not</p>	Factual lecturing	5f-38

Narrative	Analysis Categories	Code Line Count
<p>political problems. Sacramento cannot, by itself, maintain such a focus.</p> <p>The market effects can be the vital engine of improved performance, or they can mislead the system away from its real mission, educating all students. For the accountability system to work as hoped, it must be well enough designed, well enough made, and continuously improved so that the efforts of the system bear down on the results defined by the mission of the system (students accomplishing the standards set for them), rather than diverting student and teacher time and energy in sideshows (raising scores by methods more efficient than learning what the standards call for)</p> <p>The market is always going to be smarter than the regulators in state capitols. The students and teachers are going to act in their own interests, as they should. The key is to align the interests of all the parties. The weak link is the assessment technology. If there are more efficient ways to raise test scores than educating the students, the market will surely find and employ those efficiencies.</p>		
<p>1:11) 31-OCT-2000 00:45 Philip Daro (pdaro) Standards, what standards - show me the test In the early years of a standards based accountability system, schools will have such varied standards and curricula that it won't matter much how accurately the assessment measures what the standards call for. Most schools will fall short anyway, except the really good schools that are well beyond the standards. In either case, a test that is insensitive to the particulars of the standards will yield results similar to one that is more accurately focused on them.</p> <p>A few years out, however, high stakes consequences will have prompted most schools to focus their programs and curricula on the standards. At that point, the assessment system better be sharply focused on the standards; that is, it better measure the particulars of the standards rather than a more generic national average curriculum. Schools</p>	Factual lecturing	5f-53

Narrative	Analysis Categories	Code Line Count
<p>and students will quickly abandon the standards and focus their energy on whatever is tested. If we want students and teachers to take standards seriously, we better do so ourselves.</p> <p>A look at more mature accountability systems like those in Japan, Singapore, England and Germany, and even the U.S. advanced placement system run by College Board shows how those systems have dealt with the problem of aligning assessment with educational standards. In all these cases, there is an assessment program that is more substantial and employs a fuller range of assessment tools than the system that most states currently use. Those systems also meet criteria of fairness that many state systems do not; namely, they are end of course exams that demand performances for which students can effectively prepare - if they are willing to put in the effort. The preparation amounts to studying and practicing the very things that make up a good education. And the preparation pays off, students can control their destiny by working hard.</p> <p>In the short run, state systems are unlikely to be as good as the more mature systems described above. In the long run, it better get as good or it will collapse under the moral and legal pressures of treating students fairly. We must make sure that we get from the short term to the long term in good shape. This requires setting up a process that can stare reality in the face and figure out what steps are needed to keep improving the accountability system.</p>		
<p>1:12) 31-OCT-2000 00:45 Philip Daro (pdaro) Test worth teaching to? Hard to find</p> <p>Many of the most important goals of the curriculum cannot be adequately measured with tests. After years of closely observing many intelligent efforts to assess problem solving with tests, I am convinced the 'on demand' performance setting runs contrary to what good problem solvers do: they take their time to study a problem, analyze its parts and features, seek parallels in other problems, look</p>	Motivational lecturing	5M-18

Narrative	Analysis Categories	Code Line Count
<p>at it from different perspectives, work through a solution carefully, methodically to avoid errors in execution and checking the work for accuracy. The tempo of good problem solving is the tempo of thoughtfulness and careful work habits. The tempo of a test encourages leaping to conclusions, hunches and guesses. Teachers, at least, need tools that go beyond tests to assess problem solving prowess.</p>		
<p>1:13) 31-OCT-2000 00:46 Philip Daro (pdaro) What curriculum are the tests dictating?</p> <p>A well-aligned test is one where the principle component of difficulty is the difficulty of learning the particular curriculum being assessed. This means that any student who has handled the difficulty of learning the part of the curriculum at issue should find no remaining difficulties in performing well on the assessment. Such a test would not serve selection purposes very well for the very reason it serves accountability purposes well.</p> <p>In reality, the foundation of accountability is teacher grades. Teachers typically grade using their own idiosyncratic standards. Standards that matter most are those students work to achieve. What standards do the students see and respond to now? In this country, all students really have are the standards individual teachers create. Most teachers have standards for passing a course, or getting an A. There are often standards for grades on particular assignments. Sometimes these are explained in advance, sometimes they are hidden in the personality of the teacher. Some students are adept at deciphering the hidden standards but many are not.</p> <p>How are these standards calibrated from teacher to teacher and from school to school? They are not. How do students and parents and the public know how these individual teacher standards relate to local or state standards, or international performance? They are not related. In most teachers' lives, there has been no arena to compare their students' work to that of students in other classrooms and other schools.</p>	<p>Factual lecturing</p>	<p>5f-27</p>

Narrative	Analysis Categories	Code Line Count
<p>As a consequence, students in different classes, with different teachers, in different schools, work to widely varying standards, or to none at all. This lack of standards produces equally varying results. Much of the variation in standards is blind. There is no common procedure for teachers, students or the public to compare performance on course work across classrooms. Wide variation in opportunity leads to unnecessary injustices. A responsible accountability system incorporates a range of assessments to balance the extremes of individual teacher grades and normed tests. The realism of report cards and individual teacher grades can be combined with the accountability of independent judgment.</p>		
<p>1:14) 31-OCT-2000 00:46 Philip Daro (pdaro) Climbing the stairway to mediocrity</p> <p>States are not trying to select the few most competitive candidates, but trying to hold all students accountable. This presents a fundamental difficulty: how to set a performance level that is realistic for all students who work reasonably hard in a decent program. At some level, everyone knows that denying graduation to a student who did everything asked of him and learned what he could from it is unfair. So far, states have set standards on their tests for student level stakes that meet the realism criterion by setting the bar way below what their standards call for. When this is done grade by grade, the effect is a stairway where each rise is too short, so that it climbs to a level too low. In Texas, for example, a district with well over 90% of its students meeting the state standard sends these same students on to college where 90% fail the math placement test and require remediation. Still, mediocrity is a big improvement for students who were historically served worse - and there are many of those.</p>	Factual lecturing	5f-24
<p>1:15) 31-OCT-2000 00:46 Philip Daro (pdaro) Time and Focus</p>	Factual lecturing	5f-97

Narrative	Analysis Categories	Code Line Count
<p>Testing time and teaching time are both limited. Limited testing time forces the tests to be selective about what parts of the mathematics standards to test. This selection is heavily influenced by what is easy to test. With stakes attached, the curriculum selected by the test winds up being the curriculum selected by the teachers worried about test performance. While no one advocates such a curriculum, the system puts all its pressure on teachers and students to focus on it.. Does anyone really want to know what students have learned?</p> <p>Our first thoughts about accountability these days are usually about reporting to the public and the press. We must give the public information they have confidence in. Objectivity and a meaningful frame of reference for interpreting the scores are basic requirements. When you add 'cheap' to these basic requirements, norm-referenced tests dominate the marketplace.</p> <p>In some ways, this is unfortunate. Tests designed to measure individual differences and compare students to each other subvert the normal ways in which people are held accountable for their work. On most jobs, you are accountable for your performance - how well have you done what you are responsible for.</p> <p>The key to accountability is responsibility: who is accountable for what. Lay out the responsibilities of each participant in the system. It all starts with the student. The student is responsible for learning [ your standards go here]. To hold students accountable, get an assessment system that assesses [ your standards go here]. If teachers understand and commit to [ your standards go here] , then their grades can and should tell students and their parents how well they have done what they are responsible for doing, i.e. learn [ your standards go here].</p> <p>It would be nice to have an accountability system that rewarded students who studied hard what they were assigned to study. And rewarded teachers and schools that taught the students how to study and assigned the right</p>		

Narrative	Analysis Categories	Code Line Count
<p>things to study. A critical validity issue for an accountability assessments is whether they tell you how well people are doing what they are responsible for. As a rule of thumb, for a test or other assessment being considered, ask what is the most efficient way for students to improve their scores (short of cheating). If the answer is to do the assignments of a good curriculum, this is good for validity. If the answer is something else, something is amiss in the incentive system.</p> <p>All the students who learn what they are responsible for should all get their paycheck - a good grade. A test designed to assess differences among students and to compare students to other students (norm referenced, or 'grading on the curve') serves purposes of selection (college admission, for example). But does not serve the purpose of holding students accountable for learning the curriculum.</p> <p>In the end, assessments tell students what standards really count. No organization, whether a business, a team, or a school will prosper and improve if the feedback tells the workers to put their effort in the wrong place. It is even worse when feedback says their effort is not worth it because the assessment tools are not designed to detect the results of their effort. For accountability purposes from the student on up, it is crucial that the assessments be powerful enough and well enough aimed to detect the effects of learning the curriculum.</p> <p>A systematic way of improving the foundation of accountability, grades, is using a portfolio system that involves teachers and the public evaluating portfolios together. Require students to present portfolios prepared according to standards set by the school. This is a direct and realistic way to hold students accountable so everyone can recognize the results of their efforts. It makes schools more like most workplaces where people have to face the consequences of the work they do.</p> <p>A good accountability system will have multiple components: from a solid foundation in the classroom that ties directly to the work students do (such as portfolios or standards</p>		

Narrative	Analysis Categories	Code Line Count
<p>based report cards) and summary measures with low uncertainty that the public can trust and understand.</p>		
<p>1:16) 31-OCT-2000 00:47 Philip Daro (pdaro) Performance, Reliability, Validity, and Accuracy</p> <p>Evaluating the trade-offs involved in planning an assessment will require judgments about the uncertainty of particular measurements being considered. All measurement involves some uncertainty. When newspapers report a margin of error for poll results, they are quantifying the uncertainty. How much uncertainty can be tolerated depends on the purpose and consequences of the assessment.</p> <p>Perhaps the most useful technical index of uncertainty is the standard error of a score. Standard error is a more basic and generally useful way of evaluating uncertainty than reliability . Reliability is most useful when many items contribute to a single score that is referenced to the scores of a sample of scores ( or a hypothetical population). When scores are referenced to a standard, standard error makes more sense. A good way to think of uncertainty is to ask yourself the question: how likely is an independent remeasurement of the same kind to lead me to change my decision? Standard error gives you a quantitative summary of the uncertainty.</p> <p>Keeping uncertainty within reasonable bounds for the purpose is of no avail if you have the wrong target in your sights. Validity expresses how well your measurement measures what you want it to measure. Validity is the extent to which the assessment gives you the right information for your purposes; are you measuring what you want to measure? Very often, the most important things to measure are also hard to measure accurately. The push for measures with high certainty can, if too zealous, push you away from what is really important. Conversely, the push to measure top priorities, if too zealous, can lead to unacceptable uncertainty.</p> <p>If you want to evaluate a writing program, a test that is really just a very accurate measure of vocabulary may do more harm than good. Of</p>	<p>Factual lecturing</p>	<p>5f-72</p>

Narrative	Analysis Categories	Code Line Count
<p>course, most good writers will have good vocabularies and most people with poor vocabularies will not write well. This will produce high correlations between vocabulary scores and, for example, grades in a writing course. This correlation, however, will mislead decisions about the writing program. A cram course on taking vocabulary tests might appear to be a better writing program.</p> <p>When evaluating a writing program, the important questions relate to what the students are learning about writing and if they are writing better. Increasing vocabulary may fall far down on the list of priorities for the program. Direct assessments of writing samples can give you much more important information. But direct assessments of real performances often have more uncertainty associated with them. It's a trade-off.</p> <p>Obviously, we want high validity and low uncertainty. Unfortunately, unless we are willing to spend more time and money on assessment, we have to make trade-offs. The trade-offs between uncertainty and validity are the crux of the decisions that responsible educators must make. Technical experts can advise on some of the issues, curriculum experts and teachers on others, but in the end the trade-offs cannot be delegated to experts.</p>		
<p>1:17) 31-OCT-2000 00:47 Philip Daro (pdaro)  I. The almost universal practice in long standing high stakes assessment systems around the world, including the USA, provides about 2 hours of examination using a mix of multiple choice, 'bluebook' exams plus required submissions of take home work in many subjects and lab or clinical performances in some subjects to assess one course's worth of learning. This is true in European and Asian systems, in the AP exams here, in the IB exams, in prep schools and in good high schools and colleges everywhere. Licensure exams are even more expansive. Costs range from \$20 per subject per student on up.</p> <p>Is it fair to try to use testing systems that have not been designed for individual high stakes for such purposes? Is it fair to use practices that resemble those used for school level</p>	Factual lecturing	5f-25

Narrative	Analysis Categories	Code Line Count
<p>accountability rather than practices widely accepted for individual accountability for high stakes individual testing? Can the political reality face the testing reality of \$20 and 2 hours minimum or individual high stakes? What are the risks of going cheap on the costs and high on the stakes?</p>		
<p>1:18) 31-OCT-2000 00:47 Philip Daro (pdaro) What's fair to students?</p> <p>An accountability system with high stakes for individuals, especially high stakes for students (the clients) and for teachers (the professional who works with the client), must meet a high standard of fairness. Above almost everything else, it must be perceived as fair. If it fails this test, the ethical footing of the system is undermined. It will become an easy, and perhaps appropriate, target for outrage and ridicule in the press. Worse, the participants on whose good will everything depends will turn their will against it in small erosive ways.</p>	Factual lecturing	5f-13
<p>1:19) 31-OCT-2000 00:47 Philip Daro (pdaro) II. Lowland Gardens USD enrolls Joe in Algebra. Joe does his homework, studies for and passes the tests, he gets a B in the course. But Joe then flunks California's mandatory mathematics exit exam advertised to be pitched at the algebra level. Joe and his parents feel cheated. Who should they be mad at he school for claiming to have taught Joe algebra when, in fact they didn't?</p> <p>the state for a test that is not aligned with state standards on which the course materials and content are based?</p> <p>the school for have a misleading performance standard for earning a B?</p> <p>the state for having an invalid performance level on the test?</p> <p>Joe for performing poorly on game day (not doing as well on the test as he should have, given the math he knows) the state for having a testing system that has too high a probability of a false negatives (the test is not good enough at measuring all that students actually know so that for some students (10%, 20%, 50% ?) the test underestimates what they have</p>	Factual lecturing	5f-35

Narrative	Analysis Categories	Code Line Count
<p>accomplished in relation to state standards. Note: tests can, and often do, underestimate performance for some students reliably; that is, time after time so the test reliability might be very high, but validity for the purpose used is too low.</p> <p>all of the above</p> <p>What ethical and legal issues fall out of this situation? What price does the system pay for losing its ethical footing in this particular way?</p>		
<p>1:20) 31-OCT-2000 00:48 Philip Daro (pdaro) III. A substantial number of students in the state are instructed in ways that ensure they do well on state tests which are regarded as de facto standards by the teachers and principals who are held accountable to them. The bar on the state tests is set at a high realistic level; that is higher than past school performance averages, but low enough so most students in decent programs who do their work will pass. These students do pass. Many schools show good enough performance for 80 to 90% of their students. Yet most of these students, when they get to state college cannot pass the math test and require remedial math. Something is wrong:</p> <p>Are the college tests unrealistically difficult? Are they out of alignment with K-12 standards? Are they invalid for other reasons?</p> <p>Are state tests out of alignment with the curriculum needed to prepare for college level work?</p> <p>Are the bars on the state test set too low each year so that the annual steps do not rise high enough to get to the next story: college math without remediation?</p> <p>Is the instructional program too narrowly defined to prepare students to do well on tests that necessarily can only measure a fraction of what should be learned? If it takes all year to learn, how can it be tested in just 1 hour?</p> <p>What are the ethical and legal issues here? What obligation does a school system have to teach the necessary math for college work if it</p>	Factual lecturing	5f-30

Narrative	Analysis Categories	Code Line Count
<p>is being held accountable to teach the math that is on the test? If you hold people accountable to a number, you better be sure that number measures what you want, because whatever it measures that's what you'll get. The system will find the most efficient ways to get the numbers, not the most idealistic ways.</p> <p>What's fair to teachers?</p> <p>What's fair to the public?</p>		
<p>1:21) 31-OCT-2000 11:08 Susan Doherty (squinnxx) Thanks Phil. Feel free to ask Phil questions or make comments here. He'll be checking in to respond.</p>	Asks for sharing of experiences	4s-3
<p>1:22) 31-OCT-2000 15:45 Rick Norwood (rnorwood) I am surprised to hear you praise the idea of every state inventing its own assessment instrument. It seems clear to me that the goal it is prevent a state being compared unfavorably with another state, rather than to achieve accurate assessment. It requires that fifty tests be written in place of one, which will either increase the costs fifty fold or lower the quality by a similar factor. And it would unfairly penalize the many students who move from state to state in the course of their schooling.</p>	Divergent response	9d-12
<p>1:23) 31-OCT-2000 15:50 Rick Norwood (rnorwood) What an excellent fable: Status Quo Slays the Dragons of Improvement. And your suggestion of adopting world class standards is an excellent one, except that blind pride makes us want to fudge the results to make ourselves look good. But should we just throw up our hands in dispair, or is there hope for our children? Everyone seems to know how to fix the big problems with our school, but nothing happens. If anything, we move in the wrong direction. European students are taught less but learn more. Why, then, is there constant pressure for out students to be taught more and more when the result is that they learn less and less. Standard tests as assessment instruments only make sense when they stick to basics.</p>	Evaluative response	9e-17
<p>1:24) 31-OCT-2000 16:00 Rick Norwood</p>		

Narrative	Analysis Categories	Code Line Count
<p>(rnrwood) I am currently teaching a course I helped design in Logic, Problem Solving, and Geometry for K-8 education majors. One of the things I have them do is give a brief talk on their worst and best K-12 math experience. This has been a revelation for both myself and for the students. Every student has had at least one teacher who did not understand the math they were trying to teach, and who penalized students for asking questions. It's not going to get any better until we wise up.</p>	<p>Student questioning another student</p>	<p>9Q-11</p>
<p>1:26) 31-OCT-2000 17:36 Philip Daro (pdaro) Rick Norwood has made some excellent comments on my virtual talk. Everything he says is virtually true. At the bottom of all this accountability, we have take the curriculum seriously. It exists as courses with materials and assignments, with teaching and studying, with student work. Assessment should be based in a straightforward way on this curriculum, not on the abstract generalities that pass for standards in so many states. A real standards based system is much closer to "standardized" teacher grading.</p>	<p>Acknowledges student ideas</p>	<p>3a-12</p>
<p>1:27) 01-NOV-2000 13:54 Wilhelmina "Billie" Mazza (billiemscd) This may just be a matter of symantics. In section 1.11 above, talking about the issue of fairness, you appeared to connect tests presented at the end of the course with fairness because students, if they so desire, have ample time to prepare for the test. My concern relates to the distinction between student understanding of mathematics as opposed to memorizing mathematics. (Those terms imply greater generalizations than may be appropriate.) Many students, teachers and parents do not distinguish between them. I find myself wondering if those who truly UNDERSTAND the mathematics being taught (by whatever means) need ample time to prepare for testing.</p>	<p>Evaluative response</p>	<p>9e-16</p>
<p>1:29) 01-NOV-2000 15:28 Amy Puff (amypuff) Efficiency is key. Instead of developing whole tests, why don't we construct, agree upon and present test items for administration one at a time? Start with "universal" agreement of one item's worthiness, and build from there. This method could facilitate focus, rather than chaos! Also, good teachers contribute to "low</p>	<p>Convergent response</p>	<p>8c-14</p>

Narrative	Analysis Categories	Code Line Count
<p>uncertainty" by gathering evidence of student performance on a regular basis. If many valid sources of information can be accessed to show student performance, I'd prefer to spend more money on instructional support, rather than assessment. Assessment doesn't need to be overly costly or timely, just well done.</p>		
<p>1:30) 01-NOV-2000 22:56 Christine Palmer (cmpalmer)  "Billie" You raise the question, "I find myself wondering if those who truly UNDERSTAND the mathematics being taught (by whatever means) need ample time to prepare for testing." I think you raise a valid question. I talk to my students about the difference between "not enough time" and "not enough knowledge," when they are struggling on a quiz or test. I think that knowledge cannot suddenly be developed during the hours, or even days, before the assessment. Knowledge is built over time, by using the skills and concepts being taught.</p> <p>Unfortunately, students sometimes think that they have "learned" a thing because they have been taught it, and it made sense to them. However, they have not REALLY "learned" it (that is, they have not really understood it well enough to be able to explain it, or to use it in context). The other thing that comes into play, here, is the concern raised, elsewhere in the conference, by "an experienced teacher who has switched to a constructivist view". This teacher says, "When they ask me why I won't give them the answer, I simply tell them, if I give you the answer, it is just a borrow, it is still mine. If you discover the answer, you have ownership...it is yours." I believe that if they discover the "answer" and, therefore "own" it, they will remember it...Perhaps what is "fair, then, is to assess how well they REALLY understand all that has been taught -- without lots of time spent "reviewing" or otherwise "preparing" for the assessment. That way, those who REALLY know will score well, while we will have the opportunity to see who does not yet know.</p>	<p>Student talking to student</p>	<p>9t-37</p>
<p>1:31) 02-NOV-2000 10:17 Fred G. Harwood (fharwood)  I think we are forgetting that 'tests' need to be diverse in order to get a broad picture of the</p>	<p>Evaluative response</p>	<p>9e-41</p>

Narrative	Analysis Categories	Code Line Count
<p>student. This was driven home to me when I told my Gr. 9's one year that their test in a week on coordinate plane graphing would have two questions: one like this one on the board that utilizes many of your skills and the other, "tell me everything you know about coordinate plane graphing". They had a week to prepare. I was temporarily horrified to see weaker students performing well and the school's top math student getting 86% (perfect on the application problem). I took a deep breath, offered a rewrite and had students coming for help to improve on their mistakes. The top student, who had never scored under 95% on any of my paper&amp;pencil tests came in too to better prepare. Her rewrite was perfect on the application problem and an identical score on the criteria for what she knows - no improvement. This challenged me to wonder if the test was valid. Many students were able to tell me what they knew on the blank paper test and not successfully apply the knowledge in application while others could apply but not express their knowledge.</p> <p>Fortunately, my mother phoned that night and we talked for 45 minutes. When I hung up, my wife asked what we had talked about for so long. I could tell her the first thing and the last thing but the middle 30 minutes were a blank until a month later, she asked, "I wonder how your uncle's operation went?" -- I could tell her verbatim from the missing 30 minutes what my mom had told me a month earlier.</p> <p>Many of us, especially successful students, may be storing our information under triggers - when activated by the test, recall happens but is this the only valid accountability we desire? As teachers, we need to be able to organize and express knowledge effectively and completely. Should this not be 'tested'?</p>		
<p>1:32) 03-NOV-2000 16:36 Rick Norwood (rnorwood)  Billie makes the excellent observation that: "My concern relates to the distinction between student understanding of mathematics as opposed to memorizing mathematics. ... Many students, teachers and parents do not distinguish between them." To which I would add, many assessment instruments do not</p>	<p>Student share experiences and/or solutions</p>	<p>9s-9</p>

Narrative	Analysis Categories	Code Line Count
distinguish between them, or even reward memorization.		
<p>1:33) 05-NOV-2000 14:53 Christine Palmer (cmpalmer)</p> <p>In response to Rick's comment to Billie...There are some things for which memorization allows us to relegate the mundane to easy recall knowledge, so that we can concentrate on those things that require higher level thinking. There are also standardized test that penalize such knowledge. e.g. I was told that my students, whom I "require" to memorize 19 common fractions and their decimal equivalents, would be penalized if they did not show process, when asked to "estimate 10/25." My question: Why ask students to "estimate 10/25", when that is obviously 2/5 or 40%? Why not ask them to "estimate 11/25" instead? That would be a reasonable situation in which to "estimate" that 11/25 is close to 10/25, which is 40%.</p>	Student share experiences and/or solutions	9s-17
<p>1:34) 06-NOV-2000 12:40 Rick Norwood (rnorwood)</p> <p>There are some doctrinaire educators who seem to think that all memorization is bad. To me, this is just silly. How can someone learn to think if they don't know anything to think about. All real learning involves a mixture of memorization and reasoning.</p>	Student questioning another student	9Q-6
<p>1:35) 07-NOV-2000 11:45 Lisa Shute (shutel)</p> <p>Philip brings up some excellent points to think about. I do not want to teach to a test. I don't think there is a way to assess what my student actually know in one test. I don't think they have learned it until they can teach it and explain it to another person. This may not happen during the one semester I have them in class. How are state written tests aligned to our state standards going to compare us to other states and nations? Is this something that parents and the public want? Is this going to force teachers to teach in a similar manner? Will we all need to be in the same place on the same day? I have a lot of unanswered questions regarding standardized testing. I do know that the public is demanding it and it will happen eventually. We need to be involved and prepared.</p>	<p>Convergent response</p> <p>Evaluative response</p>	<p>8c-12</p> <p>9e-6</p>
<p>1:36) 07-NOV-2000 12:48 Rick Norwood (rnorwood)</p> <p>If we must have tests, let us try to insure that</p>	Convergent response	8c-15

Narrative	Analysis Categories	Code Line Count
<p>they are good tests. A good test measures a deep understanding of basic concepts. A bad test measures how much trivia a student has memorized. A good statewide algebra test might ask, "What is the maximum number of solutions to an n-th degree polynomial equation?" A bad statewide algebra test might ask, "According to Descartes' law of signs, how many negative solutions does this particular equation have." This is not to suggest that there is anything wrong with Descartes' law of signs, but it is essentially trivia that some students will have memorized (without proof) and other students won't.</p>		
<p>1:37) 07-NOV-2000 13:45 Wilhelmina "Billie" Mazza (billiemscd)  An exception to the blanket statement, "I don't want to teach to a test!" might be the ideal situation where the test addresses in a fair and unbiased manner a well-determined set of standards - whether on the state or national level. I feel sure that in some cases the newer tests that have been formulated based on a updated set of standards is one was to encourage some "set in their ways" teachers to update their teaching!</p> <p>It certainly has been a major focus of the NCTM to set forth such as set of Standards. My question then, why do the various states feel the need to create their own set of standards - and then their own set of assessments? Are we in the process of re-inventing the wheel?</p>	<p>Divergent response</p> <p>Evaluative response</p>	<p>9d-10</p> <p>9e-7</p>
<p>1:38) 07-NOV-2000 15:19 Rick Norwood (rnorwood)  Billie asks, why do the states want their own set of tests. The answer is, they want their own set of tests so that a) they can declare their program a success by adjusting the test and the passing scores accordingly and b) nobody can compare what they are doing to what any other state is doing. This is one reason why we need nationwide(worldwide?) uniform tests.  Read the item posted in the Poolside Cafe news clippings page about how Bush fudged the Texas tests to make his state look better.</p>	<p>Evaluative response</p>	<p>9e-12</p>
<p>1:39) 07-NOV-2000 15:49 Craig Morgan</p>		



Narrative	Analysis Categories	Code Line Count
<p>put them back together again. Remembering a time when my brother became an expert at taking the family radios apart, but was also notorious for being unable to put them back together again...and remembering all of our family's former students who went from college drop-out, or underachiever, to Dean's List, overnight, I suspect that perhaps a part of wisdom is experience-based. Maybe we just need to continue to ask questions, challenge understandings... and have the patience of Job.</p>		

<b>Acknowledges student ideas</b>	<b>3a-12</b>
<b>Asks for sharing of experiences</b>	<b>4s-3</b>
<b>Convergent response</b>	<b>8c-41</b>
<b>Divergent response</b>	<b>9d-22</b>
<b>Evaluative response</b>	<b>9e-99</b>
<b>Factual lecturing</b>	<b>5f-552</b>
<b>Motivational lecturing</b>	<b>5M-18</b>
<b>Personal lecturing</b>	<b>5P-20</b>
<b>Student questioning another student</b>	<b>9Q-17</b>
<b>Student share experiences and/or solutions</b>	<b>9s-54</b>
<b>Student talking to student</b>	<b>9t-63</b>

**Welcome Center**

**Table #73: Main House Closing Keynote Item 2**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb 2000 Center, Main House, Item 2, Resp 1</p> <p>Closing Keynote: Jan de Lange Item 2 17-OCT-2000 13:39 Susan Doherty (squinnxx)</p> <p>The closing keynote with Jan de Lange will open Tuesday, November 14th.</p> <p>Jan de Lange is chairman/director of the Freudenthal Institute and a full professor at Utrecht University in The Netherlands. In addition, he is Co-Principal Investigator of the Assessment Study Group of the National Center for Improving Student Learning and Achievement in Science and Mathematics in the US. In 2000, A theoretical framework for classroom assessment will be published as a result of this project. In the international</p>	<p>Orientation Lecturing</p> <p>Orientation Lecturing</p>	<p>50-12</p> <p>50-120</p>

<p>comparative assessment area he has been a member of the National Advisory Board of the TIMMS, Member of the international commission for the TIMMS-R, and is presently Chairman of the Mathematical Functional Expert Group of the OECD PISA Project. This new OECD project is seeking for indicators for student achievement on mathematical literacy.</p>		
<p>2:1) 14-NOV-2000 11:18 Jan de Lange (jdelange)</p> <p>The Problem  "(Classroom) assessment and instruction are often conceived as curiously separate in both time and purpose Graue 1993.</p> <p>"Teachers hold beliefs more consistent with traditional principles of scientific measurement. They feel that assessment needs to be separate from instruction. And that assessments need to be 'objective' "  Shepard 2000</p> <p>"(Traditional) Assessment is not fair to the students and not fair to the curriculum"  De Lange 1987</p> <p>"The sum of all reforms in education has not added up to an effective policy because something is missing: help for the teacher in classroom assessment." Black and Wiliam 1998</p>	<p>Orientation Lecturing</p>	<p>50-97</p>
<p>2:2) 14-NOV-2000 11:19 Jan de Lange (jdelange)</p> <p>On the Way to a Solution  The gap between teaching and learning at one side and assessment at the other side has become wider and wider because of the recent developments on the theory of cognitive development and the changing goals for mathematics instruction which are more and more process oriented: thinking skills and problem solving competencies are seen as key elements.</p> <p>So it is very important that we develop a better understanding of the possibilities and limitations of classroom assessment, in this case for mathematics. and as this is a very complex task we need to develop instruments</p>	<p>Orientation Lecturing</p>	<p>50-143</p>

<p>to help teachers to become experts in this field.</p> <p>First we will state our aim and principles which have been developed over the past twenty years and are based on many experimental studies, both in the US and outside the US. (De Lange 2000)</p>		
<p>2:3) 14-NOV-2000 11:19 Jan de Lange (jdelange)  Aim  The aim of classroom assessment is to produce information that contributes to the teaching-learning process and assists in educational decision making.</p> <p>Principles  The main purpose of classroom assessment is to improve learning. The mathematics is embedded in worthwhile (engaging, educative, authentic) problems that are part of the students real world.</p> <p>Methods of assessment should be such that they enable students what they know rather than what they do not know.</p> <p>Multiple and varied opportunities (formats) for students to display and document their achievement, including teacher's assistance as part of assessment.</p> <p>Tasks should operationalize all the goals of a curricula (not just the 'lower' ones). Helpful tools to achieve this are performance standards, including indications of the different levels of mathematical thinking.</p> <p>Explicit grading criteria are published and consistently applied; including examples of earlier grading showing exemplary work and less than exemplary work.</p> <p>Minimal secrecy in testing and grading  Genuine feedback to students.</p> <p>The quality of a task is not defined by its accessibility to objective scoring, reliability or validity in the traditional sense but by its authenticity, fairness and meeting of the above principles.</p>	<p>Orientation Lecturing</p>	<p>5O-346</p>

<p>These principles should be looked at in relation to the new models of teaching and learning and the place of mathematics in the curriculum, that is that mathematics is seen as tool to organize the world around us, that can help an individual dealing with real world problems and make that individual appreciate mathematics as a scientific discipline. The mathematical competencies that are needed are:</p> <p>Competencies  mathematical thinking  critical mathematical argumentation  modeling and mathematization  problem posing and solving  representation  symbols, formalism and technical communication  aids and tools</p> <p>The competencies can be divided into three different classes, varying from simple basic computational skills and recall of definitions to the highest level of mathematical thinking and reasoning and abstraction and formalization:</p> <p>Classes of Competencies Reproduction, Definitions, Computations Connections and Integration for problem solving  Ex. Peter lives 5 miles from school.  Mary lives 3 miles from the same school.  How far do Peter and Mary live from each other?  Mathematization, Mathematical Thinking, Generalization and Insight</p>		
<p>2:4) 14-NOV-2000 11:20 Jan de Lange (jdelange)  From Principles to Practice  The content of assessments should match challenging subject matter standards and representing all competencies and be connected to contexts of application in a relevant way-this by itself is no easy task as the following example clearly illustrates:  One day a sales person drove 300 miles in <math>x^2 - 4</math> hours. The following day, she drove 325 miles in <math>x + 2</math> hours.</p> <p>Write and simplify a ratio comparing her average rate the first day with the average the second day.</p>	<p>Orientation Lecturing</p>	<p>50-165</p>

<p>The teacher has a wide variety of formats to choose from, and each fits certain assessment purpose. We mention these with an example here and there (a further elaboration can be found in De Lange 2001):</p> <p>Formats - examples follow for those in bold</p> <p>Discourse Observations</p> <p>Homework Self Assessment Peer assessment</p> <p>Own Productions Multiple Choice Open Questions Open Open Questions</p> <p>Extended Response Open Items Super Items Multiple Questions Items</p> <p>Essays Oraltasks/Interviews/present Two Stage Tasks Journals Concept Maps Progress Over Time Tests</p>		
<p>2:5) 14-NOV-2000 11:21 Jan de Lange (jdelange) Discourse - wooden graphs</p> <p>Differences in Growth Wooden Graphs</p> <p>Homework - newborns</p> <p>Newborns per country This map relates the area of a country to the numbers of newborns per year in that country:</p> <p>Number of births per country (1985)</p> <p>The area of the countries is determined by the number of births per year, while the shade shows the average number of births per woman (white is low, black is high). Which countries are drawn very large compared to a "real" map? What does this</p>	<p>Factual Lecturing</p>	<p>5f-469</p>

<p>mean?          Which countries are drawn very small?          Estimate the number of newborns per year in the USA. Do the same for India.          Own Productions - population</p> <p>Population of Indonesia</p> <p>Indonesia lies between Malaysia and Australia.          Some data (1984):          Chart</p> <table border="1"> <thead> <tr> <th>Region</th> <th>Surface Area km<sup>2</sup></th> <th>Percentage of total area</th> <th>Population in 1980 (millions)</th> <th>Percentage of total population</th> </tr> </thead> <tbody> <tr> <td>Java/Madura</td> <td>132,187</td> <td>6.95</td> <td>91,281</td> <td>61.93</td> </tr> <tr> <td>Sumatra</td> <td>473,606</td> <td>24.86</td> <td>27,981</td> <td>18.99</td> </tr> <tr> <td>Kalimantan (Borneo)</td> <td>539,460</td> <td>28.32</td> <td>6,721</td> <td>4.56</td> </tr> <tr> <td>Sulawesi (Celebes)</td> <td>189,216</td> <td>9.93</td> <td>10,377</td> <td>7.04</td> </tr> <tr> <td>Bali</td> <td>5,561</td> <td>0.30</td> <td>2,470</td> <td>1.68</td> </tr> <tr> <td>Irian Jaya</td> <td>421,981</td> <td>22.16</td> <td>1,145</td> <td>5.02</td> </tr> <tr> <td>TOTAL</td> <td>1,904,569</td> <td>100.00</td> <td>147,384</td> <td>100.00</td> </tr> </tbody> </table> <p>One of the main problems of Indonesia is the uneven distribution of the population over the islands. From the table we can see that Java, which has less than 7% of the total area, has almost 62% of the population.          Design a graph (or graphs) that shows the uneven distribution of the Indonesian population.</p> <p>Open Open Questions - lighthouse</p> <p>The lighthouse keeper walks towards the lighthouse. The closer he gets, the fewer rabbits he sees. How is that possible? Can you explain that?</p> <p>Look at the following picture.          Explain with this drawing:          the closer he gets to the lighthouse, the fewer rabbits he sees.</p> <p>Extended Response Open Items - shopping</p> <p>How much does a T-shirt cost?          And how much is a soda?          Explain, and show how you arrived at that answer.</p> <p>One t-shirt costs \$18.00 because one t-shirt and one soda are \$22.00. This leaves two</p>	Region	Surface Area km <sup>2</sup>	Percentage of total area	Population in 1980 (millions)	Percentage of total population	Java/Madura	132,187	6.95	91,281	61.93	Sumatra	473,606	24.86	27,981	18.99	Kalimantan (Borneo)	539,460	28.32	6,721	4.56	Sulawesi (Celebes)	189,216	9.93	10,377	7.04	Bali	5,561	0.30	2,470	1.68	Irian Jaya	421,981	22.16	1,145	5.02	TOTAL	1,904,569	100.00	147,384	100.00		
Region	Surface Area km <sup>2</sup>	Percentage of total area	Population in 1980 (millions)	Percentage of total population																																						
Java/Madura	132,187	6.95	91,281	61.93																																						
Sumatra	473,606	24.86	27,981	18.99																																						
Kalimantan (Borneo)	539,460	28.32	6,721	4.56																																						
Sulawesi (Celebes)	189,216	9.93	10,377	7.04																																						
Bali	5,561	0.30	2,470	1.68																																						
Irian Jaya	421,981	22.16	1,145	5.02																																						
TOTAL	1,904,569	100.00	147,384	100.00																																						

<p>sodas in the lower picture and \$8.00. So, one soda is \$4.00 and <math>22-4=18</math>. So, one t-shirt costs \$18.00.</p> <p>Counting on 2 t-shirts and 2 sodas, then 1 t-shirt and 3 sodas, then 0 t-shirts and 4 sodas.  Price was \$44.00 less 1 t-shirt  \$30.00 less 1 t-shirt  left \$16.00 divided by 4 = \$4.00</p> <p>Essays - defense budget</p> <p>In a certain country the defense budget is 30 million dollars for 1990. The total budget for that year is 500 million dollars. The following year the defense budget is 35 million, while the total is 605 million. Inflation during this period between the budgets was 10%.</p> <p>You are invited to lecture to a military academy.  Explain that the defense budget has increased during this year.</p> <p>You are invited to lecture for a pacifist society.  You want to explain that the defense budget has decreased last year.</p>		
<p>2:6) 14-NOV-2000 11:21 Jan de Lange (jdelange)  Reporting: Feedback and Scoring</p> <p>Selecting a task format and designing the task is one thing (and difficult nonetheless) but how to establish quality feedback quite another, and a very important one. Feedback, according to Ramaprasad (1983) is information about the gap between the actual level and the reference level of a system parameter which is used to alter the gap in some way. In order for feedback to exist the information about the gap must be used in altering that gap. Black and Wiliam (1998) are surprised to see how little attention in the research has been given to task characteristics and the effectiveness of feedback. They conclude that feedback appears to be less successful in 'heavily-cued' situations such as are found in computer based instruction and relatively more successful in situations that require 'higher-order' thinking.</p> <p>Feedback is often confused with test scores as Wiggings (1992) points out correctly. What we</p>	<p>Factual Lecturing</p>	<p>5f-191</p>

<p>need is feedback on one side and 'scores' to keep track of growth over time in a more quantitative way on the other side. And often we need to accept that we are unable to quantify in an objective way.</p>		
<p>2:7) 14-NOV-2000 11:22 Jan de Lange (jdelange) To Change the Culture</p> <p>Students and teachers that have experienced 'embedded' assessment as described above will never go back to the old traditional tests. Actually they don't understand why those tests exist other than for accountability reasons. But the desired change process will be lengthy and difficult: not only because the resistance that will inevitably occur but even more because the design of proper tasks, the feedback and the scoring of those tasks is a very difficult task. It is therefore of utmost importance that the professionalization process of teachers will be taken seriously. Teachers need support and resources and it is at least promising that certain projects for professionalization of teachers in the area of classroom assessment in mathematics are under way or under development. We mention just one: CATCH of National Centre for Improving Student Learning &amp; Achievement in Mathematics and Science (Madison, Wisconsin).</p>	<p>Orientation Lecturing</p>	<p>5O-146</p>
<p>2:8) 14-NOV-2000 15:02 Rick Norwood (rnorwood) While all of these questions are good and fun, I would hate to see all assessment depend on questions such as these. I think one component of assessment should be on skills, because the student is going to find that teachers of later courses (and, after graduation, employers) need and expect a uniform skills base. I'm a good problem solver, but if I had never been taught to factor the difference of two squares, it would just plain take too long for me to figure it out for myself. As valuable as that experience might be, I would be left behind, unemployed, or failing in the next course. We cannot figure everything out. There needs to be a balance between thought problems and skills. Right now, the mix is too far in the skills direction, but I would hate to see it go too far the other way.</p>	<p>Divergent Response</p>	<p>9d-148</p>

<p>2:9) 14-NOV-2000 20:03 Beth Sukraw (bsukraw)  I enjoyed Rick Norwood's response to the balance that must be in place between the types of assessments. Students will always be judged on the skills and the application of those skills. They have to be ready for all types of assessments.</p>	<p>Evaluative Response</p>	<p>9e-42</p>
<p>2:10) 15-NOV-2000 13:37 Brooke Bertholet (brooke)  I, for my part, was very surprised and pleased by Professor Jan De Lange's concluding remarks. As a part of a student's ability to communicate ideas, even if flawed in full terms of the dictates of logic, yet where their endeavor is of the utmost importance, to be able to engage in "critical mathematical argumentation" is of the highest objective. An opportunity for extended response is also very crucial.</p> <p>The point about "embedded instruction" is also very well taken. The traditional tests are unable to account for many things. What I would like to mention here, which as far as I know hasn't been broached in the seminar, is the difference of cultural assumptions regarding reasoning and how they are to be taken into consideration as well. Ethno-cultural mathematics is something to take into consideration, especially with regard to assessment. The feedback, and support given by NCTM generated materials in this area has been most helpful. How much of the "embedded instruction" has been guided by a certain cultural perspective and assumption regarding mathematical reasoning?</p> <p>Also, I too appreciate that the "feedback (is) less successful in cued instruction than in higher-order thinking." I am unable to "evaluate" my students unless they are able to draw me into their reasoning and demonstrate why they have reached a conclusion, without my overly direct intervention as to what is the right way to proceed. This, though, does not mean, that skills are neglected or that foundational support is ignored.</p> <p>I enjoyed the open-open question of the "Lighthouse" and will gladly present it to my students as an activity in mathematical reasoning, simple world reasoning, "critical</p>	<p>Convergent Response</p>	<p>8c-297</p>

mathematical argumentation," and plain sharing of perspective which needs to be fully articulated in written and verbal communication. Thanks for the thought-provoking and stimulating contribution.		
---	--	--

**Main House Home**

**Table # 74: Main House Home, Item 3 Panel 1: Those Dreaded Tests Kids HAVE TO Take**

Narrative	Analysis Categories	Code Line Count
<p>PBS MS Panel 1: Those Dreaded Tests Kids HAVE TO Take Main House Item 3</p> <p>Item 3 17-OCT-2000 13:41 Susan Doherty (squinnxx) Panel 1: Those Dreaded Tests Kids HAVE TO Take: The Pluses and Minuses</p> <p>Opens Tuesday, October 31, 2000</p> <p>This panel will look at and discuss the positive and negative aspects, the ups and downs of district-wide and state-wide mandated assessment.</p> <p>You can look at these tests as impositions or you can look at them as helping to shape instruction.</p> <p>We will discuss both sides and try to help you decide how to make the best of these tests imposed from the outside.</p>	Orientation lecturing	50-13
<p>3:1) 17-OCT-2000 13:44 Susan Doherty (squinnxx) The Panelists</p> <p>Mari Muri is a mathematics consultant for the Connecticut State Dept. of Education and a co-principal investigator of the CT State Systemic Initiative, Project CONSTRUCT. Mari plays a major role in the design and implementation of the CT Mathematics Assessment Programs at grades 4, 6, 8, and 10. Mari also served as the Project Leader for CT's BEST mathematics Beginning Educator Portfolio Assessment. Mari has been involved in education for 21 years</p>	Orientation Lecturing	50-35

Narrative	Analysis Categories	Code Line Count
<p>teaching mathematics from elementary to university teacher education.</p> <p>Jennifer Bay is assistant professor of mathematics education at Kansas State University. She was a middle school mathematics teacher for nine years in several different districts and states. Her continued involvement with the Show-Me Center (NSF-sponsored middle school mathematics curriculum dissemination center) has included presentations on assessment in the curricula. She is currently working with pre-service and inservice teachers in meeting the demands of state-mandated mathematics assessment.</p> <p>Diane Briars is Mathematics Director for the Pittsburgh Public Schools and Co-Director of PRIME, the Pittsburgh Reform in Mathematics Education Project. As such, she is responsible for all aspects of the K-12 mathematics program, including curriculum and assessment development, professional development, and the development of special programs. The major focus of current district work is implementation of standards-based instruction and assessment as called for in the NCTM Standards documents.</p>		
<p>3:2) 31-OCT-2000 02:45 Susan Doherty (squinnxx) Mari, how about you start with some of the common questions you get and how you would respond.</p>	<p>Gives directions: physical action on the part of the learner</p>	<p>6-3</p>
<p>3:3) 31-OCT-2000 02:49 Mari Muri (mmuri) Sure, Susan. I'll start with a couple of questions I hear a lot.</p> <p>First, who develops the large scale tests used by states or districts?</p> <p>In most states, a committee with a range of constituencies, advises the district or state leadership on acceptable test practices. Generally, a state or district works with a reputable test development corporation for final creation of testing instruments. For example, in</p>	<p>Factual Lecturing</p>	<p>5f-95</p>

Narrative	Analysis Categories	Code Line Count
<p>Connecticut, the state department of education convenes a statewide advisory committee for both its elementary and secondary test development. The committee is co-chaired by representatives from both the assessment and curriculum bureaus. Actual test formats and test items are reviewed by committee members and their advice is taken into consideration when final test forms are compiled with the assistance of the testing company under contract.</p> <p>In some cases, states choose to use on off-the-shelf norm referenced achievement test, such as the Iowa Test of Basic Skills. In such a case, item development is left to the testing company rather than to local or state level committee input.</p> <p>How are large scale state or district test results used and/or misused?</p> <p>These tests are used identify individual students' strengths and/or weaknesses. At times these decisions are based on normative information (comparing students to other students who took the test) and other times on criterion basis (that is, how well did the student do compared to a pre-determined list of criteria or standards).</p> <p>Based on this information of individual students, decision are made about such issues as tracking or grade placement, promotion and/or retention, or certification decisions such as awarding or withholding high school diplomas. The dilemma is, are these life-impacting decisions really fairly made based on a one-time exam?</p> <p>By compiling aggregate scores of students in a particular class, school , or district judgments are made on how well a classroom or a school or a district scored compared to other classrooms, schools within a district, or how a district</p>		

Narrative	Analysis Categories	Code Line Count
<p>scored compared to other districts in the state.</p> <p>Implications that go along with these decisions may include teacher evaluation, and rewards or sanctions for low or high performing schools or districts. Can a fair judgment about a teacher's ability to teach be made on the basis of a one time externally imposed test? Can such a decision be made based on repeated low performance be t he students of a particular teacher? How does a district or a state disburse finances to help improve test scores? How does rewarding high achieving schools or districts impact improved instruction? I suppose one could argue that these high performing schools or districts could serve as models for lesser achieving schools or districts. the reward money could be used to disseminate successful strategies. In the case of providing extra funding for low achieving schools or districts, it is presumed that funding would be used to promote additional help to students in order to increase achievement.</p> <p>The idea of sanctions has never made sense to me. If a school or district performs poorly, why would a funding agency deny additional funds in order to improve instruction and increased student achievement? I do believe a careful action plan for improved instruction and increased student achievement ought to be a prerequisite for receiving funding based on results of these tests.</p> <p>Although I've noted some misuse of test results above, there are additional blatant misuses. When schools or districts are rank-ordered based on a one time test administration it has great impact on the local community. Rank-orders published in newspapers can be greatly misconstrued. Generally there is no mention of other factors, besides teaching, that enter into how a particular group of students might score. There is no mention of socio-economic levels of</p>		



Narrative	Analysis Categories	Code Line Count
<p>In a couple of states, and in many districts, a collection of student work displayed in a portfolio can also serve as demonstration of subject competence. This type of large scale assessment is less reliable and costly to administer. It is, however, a very comfortable method to collect student data at the classroom level.</p>		
<p>3:6) 31-OCT-2000 15:56 Johnny Lott (lott) Any advice for teachers who will be using a standardized test to "test" the achievement of students in meeting state standards when the mathematics committee examining the test thought it could test no more than 15% of state standards?</p>	Convergent response	8c-6
<p>3:7) 31-OCT-2000 16:33 Mari Muri (mmuri) Hi, Johnny , It seems to me that the group that made the test comparison to the state Standards, along with members of the state's math professional organization ought to document their findings and write them up in a paper that can be formally presented to the state education agency at one of its regular Board meetings. A grass roots swell that includes classroom teachers, administrators, math specialists, as well as higher education faculty should be involved in this process. If you have some interested, concerned parents who support your "mission" they can also help move things along - first by showing their support to doing away with this kind of unfair test of the standards, but second by contacting members of the Board directly. This may sound subversive, but I think that's the only way to approach this inequity. Mari</p>	Factual Lecturing	5f-18
<p>3:8) 31-OCT-2000 17:47 Brooke Bertholet (brooke)  Mari: Isn't the way in which teachers assess students in everyday classroom situations the most effective, but possibly</p>	Initiated Comment	9i-16

Narrative	Analysis Categories	Code Line Count
<p>least "practical" way of going about assessment? Especially in mathematics, a justification of your thinking and a description of process are the most important factors for a teacher to be able to identify as strengths of a student. This would be an allowance to meet individualized instruction toward concrete goals, though it may not meet the "objective" standards of an administrator who is simply looking for data, in turn, without appreciating the actual learning achieved by the individual student? How, in your mind, could some kind of compromise on authentic assessment be achieved?</p>		
<p>3:9) 31-OCT-2000 18:14 Roberta W Grenz (robin) I would also like to hear a discussion of Brooke's question. I do find, however, that using assessments with justification and description of process, along with "projects" developed from group investigations/explorations, lead to better scores on the beloved standardized tests.</p>	Convergent Response	8c-6
<p>3:10) 31-OCT-2000 22:19 Mari Muri (mmuri) Hi, Brooke and Roberta -Your concerns are very real! Classroom Assessment IS the most important way to monitor student learning - what students know and can do. Getting students to justify their thinking or describing their problem solving process(es) both orally and in writing, not only gives the teacher great insight into the students' learning but it also gives other students the opportunity to learn different ways of thinking mathematically from each other. I have found, as Roberta suggested, that students who learn in such an atmosphere do well on any test, even the mundanest multiple choice test. I think the big fear of some people is that if instruction consists primarily of problem solving and projects, that kids miss out on learning their basic facts with instant recall.</p>	Praises or Encourages	2-37

Narrative	Analysis Categories	Code Line Count
<p>There are now statewide assessments (and even some options that can be chosen with off-the-shelf achievement tests) which incorporate math problems similar to those a classroom teacher might use in assessing student progress. These type of items may ask students to show or describe their work, may allow students to use different solution paths, or - at times - even allow for a variety of correct solutions. All of these kinds of items leave room for giving students partial credit, as we would in the classroom. Through the student work, a teacher (or scorer of the test item) is able to determine how much a student knows and what he or she can do. Many other countries use many more of these open-ended kinds of assessments. We are slow in this country to adopt similar large scale assessments. I think this may be due to costs and time associated with test development, administration, and scoring.</p>	Factual Lecturing	5f-25
<p>3:11) 01-NOV-2000 14:54 Luke Dowell (ldowell) Hi Mari, I agree that students who learn in an atmosphere where understanding is the primary goal SHOULD be able to do well on any type of test. I think the fears that students in these classes will not learn basic facts need to be addressed by realizing that you can't go to one extreme or the other. When you ask students to describe their processes for problem solving, the basic skills can still be addressed and emphasized. You also mentioned that this country is slow in using open-ended assessments where students can show and explain their work. The Kansas Math Assessment Tests used in the late 90's contained open ended problems like these. As a teacher who had to help grade these on my own time, it was not enjoyable. I think the idea is a good one, but a lot of our students did poorly because they were not used to assessment items like that. Also, the teachers had to find time to</p>	Convergent Response	8c-24

Narrative	Analysis Categories	Code Line Count
<p>grade them. One year we did use an inservice day to grade these assessments, but I'm not sure how consistently they were scored. I can understand why we are slow to implement this across the country.</p>		
<p>3:12) 01-NOV-2000 16:56 Mari Muri (mmuri)  Hello, Luke -Open-ended assessment items are more difficult and time consuming to score, but they tell the teacher so much more about what the student understands about the mathematics. Ideally, teachers who administer these 'outside' tests are the best to score these items - seeing student work gives the teachers/scorers a real insight to student understanding or misunderstanding. Teachers are already so overburdened that we cannot ask them to do this scoring without extensive training and proper compensation.</p> <p>In CT for many years we had CT teachers score student writing samples from our state-wide Mastery Test - it was the best professional development around student work that could possibly be provided. Our teachers did get sufficient training and were adequately compensated; they were not required to do the scoring on their own time without pay. Now these writing samples, and our open-ended math items, are scored by trained scorers outside the state. Scoring is reliable, but we miss out on the professional development aspects that the test results can have. CT also provides districts with in-between-year tests that are administered and scored locally (they are not mandated and therefore not high stakes). I hear over and over from these districts that scoring their own students' work is very beneficial in helping to decide where curriculum and/ or teaching needs to be beefed up. I agree with you that we need to make sure that kids have balanced instruction: that they gain a command of their basic facts and accurate computation as well</p>	<p>Personal Lecturing</p>	<p>5P-39</p>

Narrative	Analysis Categories	Code Line Count
<p>as work on mathematics set in problem situations with diverse answers or diverse solution paths and can communicate their thinking. One should not be at the expense of the other!</p>		
<p>3:13) 01-NOV-2000 17:22 Jennifer Bay (jbay)  I would like to jump in on the question of open-ended responses. First of all, the purpose of assessment in the classroom is different than that of state assessments. In the classroom we use open-ended responses in order to better understand what students know and don't know so that we can plan better for instruction with those students. State and national tests help us to reflect on our curriculum, but not on our student learning. In other words, when you receive test results, you can see what areas last year's students were weak in and make decisions about reworking your curriculum. This raises the issue of the importance of open-ended responses - are they as important on state mandated tests? Are they aligned with the goals of the test?</p> <p>On the other side of that, I have worked in Missouri as they moved to an open-ended state assessment and now live in Kansas where they have just moved away from an open-ended state math assessment. In Missouri, there was a surge of interest by teachers in how to use written responses to mathematics questions and how to assess this work. So, the state test encouraged (forced?) teachers to learn how to use and assess open-ended responses in the classroom. In Kansas, I have not noticed this kind of focused emphasis. There is more of an interest in the content areas that are scoring low. So, while open-ended responses on state tests have many problems, it has had an interesting impact on teacher professional development, at least in these two cases.</p>	<p>Personal Lecturing</p>	<p>5P-34</p>
<p>3:14) 01-NOV-2000 19:19 Maurice Burke</p>		



Narrative	Analysis Categories	Code Line Count
<p>3:16) 01-NOV-2000 20:02 Diane Briars (dbriars)            Sure, Susan - Several standards-based (not norm-referenced) assessments are currently commercially available.</p> <p>The New Standards Reference Exam is a standards-based assessment for mathematics and communications (reading and writing) for grades 4, 8 and 10. It primarily consists of performance tasks, and provides information on students' performance in skills, concepts and problem solving. We have been using this assessment in Pittsburgh for the past four years, and have found that it has really supported efforts to improve mathematics instruction.</p> <p>Teachers are doing more problem solving and giving students opportunities to write and explain their thinking. The New Standards Exams are aligned with our standards-based instructional materials, so have promoted use of those materials in classrooms. The New Standards Exams are published by Harcourt Brace Educational Measurement. For more information, call 1-800-211-8378 or visit their website.</p> <p>The Mathematics Assessment Resource Service (MARS), headed by Sandy Wilcox at Michigan State University, provides custom-designed assessments and/or professional development re: mathematics assessment. MARS build upon the Balanced Assessment Project, which developed and classroom-tests a bank of performance assessment tasks. Some of these tasks have been published by Dale Seymour as Balanced Assessment Packages for elementary, middle and high school. For more information on MARS, check out their website.</p> <p>Finally, MARS is joining CTB-McGraw-Hill, publishers of TerraNova, in producing a new, standards-based performance mathematics assessment</p>	<p>Factual Lecturing</p>	<p>5f-42</p>

Narrative	Analysis Categories	Code Line Count
for grades 3-10. This assessment will be available in the spring. For more information, contact the MARS project or your CTB-McGraw-Hill representative.		
<p>3:17) 01-NOV-2000 20:34 Jennifer Bay (jbay)</p> <p>Hi Maurice! - I will respond to your idea. I think the idea of doing assessment that does not interfere or interrupt instruction is definitely worth pursuing. Random sampling also has possibilities and is done on national tests like NAEP (sample U.S. schools). The problem with school based tests, is that parents, administrators, and other stake holders are not as interested in how their students do locally as how they compare statewide or nationally. It is essentially impossible to compare students when different instruments are used to measure them. Another important point to consider is how difficult it is to design a good assessment, much less to assess it effectively (Workshop 1 has some good ideas for this, by the way).</p>	Formulates directions for learning	3f-16
<p>3:18) 01-NOV-2000 21:53 Susan Doherty (squinnxx)</p> <p>Jennifer, could you tell us a bit more about national tests?</p>	Asks Factual Questions	4f-2
<p>3:19) 01-NOV-2000 21:54 Jennifer Bay (jbay)</p> <p>National tests that assess how US students are doing include:</p> <p>(1) NAEP – this test is given every two years to districts in the U.S. Data is analyzed for growth over history of the exam and for content areas that are weak and strong.</p> <p>(2) TIMSS – this is an international test that compares U.S. students to students in other countries. In addition, videos of classrooms from Japan, Germany &amp; the U.S. are available. Curriculum from the</p>	Factual Lecturing	5f-18

Narrative	Analysis Categories	Code Line Count
<p>countries were also included in the study.</p> <p>Tests that are commonly used in schools in the U.S. include:</p> <p>(1) Complete Battery of the Stanford Achievement Test Series, Ninth Edition also known as the Stanford 9.</p> <p>(2) The Iowa test of Basic Skills.</p>		
<p>3:20) 01-NOV-2000 21:56 Susan Doherty (squinnxx)</p> <p>And what are these tests saying? -----</p>	Asks Evaluative Questions	4e-1
<p>3:21) 01-NOV-2000 21:56 Mari Muri (mmuri)</p> <p>The message from NAEP is that American students are doing fairly well in mathematics, certainly better than portrayed by the results from TIMSS. The USA did very poorly compared to other countries, especially as we moved up through the grades. At grade 4 we were about in the middle of the pack, went down in grade 8, and we were near the bottom in grade 12. Results from TIMSS-R should prove to be very interesting.</p>	Factual Lecturing	5f-10
<p>3:22) 01-NOV-2000 21:57 Jennifer Bay (jbay)</p> <p>Yes, you can review the results at these sites: NAEP: <a href="http://nces.ed.gov/nationsreportcard/site/home.asp">http://nces.ed.gov/nationsreportcard/site/home.asp</a> TIMSS: <a href="http://nces.ed.gov/timss/timss95/more.asp">http://nces.ed.gov/timss/timss95/more.asp</a> OR <a href="http://ustimss.msu.edu">http://ustimss.msu.edu</a></p>	Gives or asks for Resources	5R-7
<p>3:23) 01-NOV-2000 22:34 Mari Muri (mmuri)</p> <p>Hi, Maurice , Wearing my compassionate 'teacher hat' I think your idea of testing at the school level and reporting to the state is great! In fact that is similar to what VT did with its portfolio statewide assessment. Teachers (with their students) had to maintain individual</p>	<p>Praises or Encourages</p> <p>Formulates directions for learning</p>	<p>2-3</p> <p>3f-31</p>

Narrative	Analysis Categories	Code Line Count
<p>portfolios. Originally many teachers were trained to score these portfolios at the state level. This became too cumbersome. Eventually teachers still had to maintain and score the portfolios but then a random sampling was sent to the state for validation/verification.</p> <p>Unfortunately this kind of assessment doesn't sit well with the accountability people - boards of ed, state legislators, etc. Locally developed and administered tests can have such great variance. They can serve well to assess kids and show growth within a district, but don't serve as well when comparing district to district (or even school to school or classroom to classroom). There it is: accountability rearing its head again! State mandated tests don't all have to be bad...since all kids take the same test, it is easier to make comparison across classrooms, schools, districts. The tricky part is creating a worthwhile test that really tests what we feel ALL kids should know and be able to do - and that includes open-ended problem solving, not just regurgitating facts. Here's another idea - what do you think? Let's create a GIANT database of assessment items to which everyone has access. Then create statewide tests from the same bank? Items would reflect Standards-based teaching and learning. Now nothing should be a surprise to the kids or the teacher.</p>		
<p>3:24) 02-NOV-2000 09:18 Wilhelmina "Billie" Mazza (billiemscd)</p> <p>Mari, I note that in your response to creators of test that there was no mention of classroom teachers - i.e. people who work on a daily basis with the children being tested. It this an accidental or deliberate oversight on the part of the those creating committees?</p> <p>I often wonder if those making important educational decisions at the state and national level have any input from those with experience in the field!</p>	Initiated Comment	9i-10

Narrative	Analysis Categories	Code Line Count
<p>3:25) 02-NOV-2000 10:42 Fred G. Harwood (fharwood)</p> <p>On Maurice's Idea: Wouldn't accountability would lead to abuse and cheating by schools desperate for funding, recognition, students transferring in or out?</p> <p>On a rich understanding base allowing students to do well on any assessment instrument: I'd like to share another anecdote: I offered a Gr. 8 class a choice of assignments: do a worksheet of 100 adding integer problems or to play cards? Of course, they chose cards (my cards had integers on them). They proceeded to play a tournament of war subsequently doing close to 400 questions of addition and comparing relative sizes of integers. One LD kid was winning so I tracked him for a bit - he was lightning quick and never made a mistake. He even ended up the champion! For closure, I gave a 10 question addition test with nothing harder than the cards. My champion had 2/10 and only two students had 10/10! My next block came in and I gave them the same choice. The only difference was what I told them before the tournament, "A strange thing happened in the last block, after the games we had a short quiz based on the activity and few kids got 100% and many failed!" I then put a sample question on the board and drew card like boxes around the question's two numbers. After the tournament, 80% of this class had 10/10! The same result in the next block!</p> <p>The moral of this anecdote: we can't assume transfer. Transfer must be shepherded as the students build their scaffolding of understanding. I have had great problem solvers leave multiple choice questions blank because they weren't sure how to proceed. The logic of the test assessors not knowing when they were guessing came clear to them when</p>	<p>Initiated Comment</p>	<p>9i-43</p>

Narrative	Analysis Categories	Code Line Count
<p>explained. Kids need to experience different testing formats to remove emotional barriers to performance and to shepherd approaches. And all this comes from a teacher who despises 'teaching to the test'!</p>		
<p>3:26) 02-NOV-2000 11:32 Jennifer Bay (jbay)</p> <p>Billie, I am glad you brought up the issue of committee membership. If committee members aren't carefully chosen, support for the end product, as well as quality of the end product is at risk. Such was the case with the USDE effort in producing the "Exemplary &amp; Promising Programs in Mathematics Education" where many mathematicians voiced strong disapproval of the process, and in particular the lack of research mathematicians on the committee.</p> <p>In regards to Mari's response, the committee she refers to does include teachers, as well as other educators. If you also take a look at her response to Johnny Lott (comment 7), she actually lists teachers first in her list of constituents to make state level change.</p> <p>Thanks for highlighting this point.</p>	<p>Praises or Encourages</p> <p>Factual Lecturing</p>	<p>2-2</p> <p>5f-15</p>
<p>3:27) 02-NOV-2000 11:39 Jennifer Bay (jbay)</p> <p>Fred, Excellent point. This probably occurs more than most of us are aware - and makes for a great action research project! In any case, it brings up the point that student scores on state or national assessments may not be an accurate measure of what they know. First, as you mentioned, because the different format of the test may be enough to throw them off. Secondly, many students do not see the value in trying hard on tests that are just mailed off. And, they get burned out before their testing is done. To prepare for the tests, students need to be familiar with the</p>	<p>Praises or Encourages</p> <p>Factual lecturing</p>	<p>2-1</p> <p>5f-15</p>

Narrative	Analysis Categories	Code Line Count
<p>format, but also prepared for the length - these notions go against what many of us feel is "appropriate assessment". Hence, it is a dilemma.</p> <p>WHAT ARE YOUR THOUGHTS? (this question is to anyone logging on and reading, not just to Fred)</p>	Asks Evaluative Questions	4e-3
<p>3:28) 02-NOV-2000 13:42 Maurice Burke (burke)</p> <p>Hi Jennifer, Mari and Fred and....(I love how these discussions grow.)</p> <p>If states are all developing their own tests based on their own standards then comparisons between states might be suspect. As far as cheating, there is already an immense amount of this going on with standardized tests according to an article I read last year. It gets worse the higher the stakes. (I will try to find the article - it came to me on-line.) I like the idea of a test bank of open ended items and other assessment items that can be related to state standards. What if school-based assessments were required to draw their items from such a bank? What if (like the IRS when it does audits) states periodically "audited" schools as part of the quality control to insure that schools were not cheating? But more importantly, I think it would be beneficial for schools if they could regularly take the pulse of what their students are actually learning and retaining vis-a-vis state standards and benchmarks. I think teachers would be willing to be involved in "objectively" taking the pulse (as long as you are using judicious sampling and the school year is structured to provide a team of teachers some time, periodically, to engage in the activity.)In an ideal world such assessments might give valuable feedback to teachers and administrators about the curriculum and teaching practices in the school.</p> <p>Workshop 1 is very interesting and has given me lots of ideas about school -</p>	Convergent Response	8c-42

Narrative	Analysis Categories	Code Line Count
<p>based assessments. The current system of state and national testing, as the keynote speaker points out, runs the risk of being useless to teachers and vulnerable to non-educational methods for improving scores...A district near to my home gave the students who raised their standardized scores above their previous year's scores a day off school. The district averages in math went up 14% that year over the previous year.</p>		
<p>3:29) 02-NOV-2000 13:54 Luke Dowell (ldowell)</p> <p>I teach at a community college and I am currently serving on our assessment committee. For accreditation purposes, we need to develop and implement program assessment for all areas of the college. In other words, we need to show that the math department is meeting the needs of all students, regardless of their major or even the particular math course they take. Do any of you have any suggestions for how to develop this kind of assessment and how to sell the other teachers on it? I am mainly concerned with math, but we will need to do this for all programs.</p>	<p>Initiated Comment</p>	<p>9i-12</p>
<p>3:30) 02-NOV-2000 19:49 Jennifer Bay (jbay)</p> <p>Hello, Maurice! You are right about comparing across states. The only way to accurately compare across states, is to compare ITBS or SAT-9 scores. There is also some data from NAEP from specific states. I have worked in four different school systems, in two different states. In each case, teachers had kept their own copy of the state test, though this was "illegal". I would venture to guess that many teachers have access to their state assessment. The unfortunate consequence of this is teachers that may focus on the exact questions being asked and not on the broader topic and important concepts related to that particular question. As</p>	<p>Praises or Encourages</p> <p>Personal Lecturing</p>	<p>2-1</p> <p>5P-21</p>

Narrative	Analysis Categories	Code Line Count
<p>Fred mentioned, transfer is already a problem with students. A narrow focus on test-preparation can only further limit students' ability to apply their knowledge to new situations.</p> <p>I really like the idea of a no-stakes assessment. Then the focus moves from improving the school's standings, to what students need to know, which otherwise can get overshadowed.</p>		
<p>3:31) 02-NOV-2000 20:04 Jennifer Bay (jbay)</p> <p>Luke,</p> <p>This is a good question. Part of the answer depends on who is doing the accreditation. They will have expectations of what you need to report and that will lead to the kind of information you need to collect. As an example, in education, we are accredited by NCATE. They have standards and assessment criteria. If you want more information on this go to <a href="http://www.ncate.org/standard/programstds.htm">http://www.ncate.org/standard/programstds.htm</a></p> <p>Other suggestions from those that are in a mathematics department or have experience with accreditation - please jump in.</p>	<p>Praises or Encourages</p> <p>Gives or asks for Resources</p> <p>Asks for Sharing of experiences</p>	<p>2-1</p> <p>5R-8</p> <p>4s-3</p>
<p>3:32) 02-NOV-2000 20:04 Fred G. Harwood (fharwood)</p> <p>In our province of BC, we changed the province wide assessments at Gr. 4, 7 and 10 from curric-based to numeracy/problem-solving based and this at least raised a lot of questions about what is important to teach, assess and how can we create more relevance.</p> <p>Volunteer teachers are paid to mark the open-response questions with a rubric. They are trained in the rubric which makes for great Pro-D and the discussions on grading rich. Other teachers are asked to prepare the next</p>	<p>Student share experiences and/or solutions</p>	<p>9s-17</p>

Narrative	Analysis Categories	Code Line Count
<p>year's bank of questions for one of the grade levels and they too are trained in the rubric for 'assessing' the previous year's questions and for creating new. Ministry officials then put together some of them in the next year's 'Foundational Skills Assessment'.</p>		
<p>3:33) 03-NOV-2000 07:33 Jennifer Bay (jbay)</p> <p>Hi Fred! Sounds like a great model. What is the feedback from teachers and other stakeholders? Is the process and/or the items available to others?</p>	Asks Convergent Questions	4c-4
<p>3:34) 03-NOV-2000 08:17 Craig Morgan (cmorgan)</p> <p>If you are interested in finding out more about high stakes testing, see the October,2000 issue of the PHI DELTA KAPPAN. On page 115, they have an article on Strategies for Dealing with High-Stakes StateTest. They talk about ways districts have been coping and possibly the correct way to put up with the tests without corrupting learnig.</p>	Student share experiences and/or solutions	9s-8
<p>3:35) 03-NOV-2000 10:24 Fred G. Harwood (fharwood)</p> <p>Our Foundational Skills Assessment setup and practice tests in pdf format can be gotten at through the following website. I didn't know how to create the hyperlink so unless Susan can upgrade it, you'll need to copy and paste the URL. <a href="http://www.bced.gov.bc.ca/assessment/fsa/">http://www.bced.gov.bc.ca/assessment/fsa/</a></p>	Factual Response	8f-7
<p>3:36) 03-NOV-2000 12:00 Luke Dowell (ldowell)</p> <p>Thanks Jennifer and Fred.</p> <p>We are accredited by the North Central Association, and we are in the process of contacting them for any suggestions. North Central might be related to NCATE. I think we are in the same</p>	Convergent Response	8c-35

Narrative	Analysis Categories	Code Line Count
<p>position as teachers dealing with state assessments because we need to find a way to show that our students are getting what they need, satisfy North Central, but also make sure we get our teachers to buy into it. We can't create something that is going to require a lot of teacher time when they will not be compensated for that extra time. On the other hand, I don't want something in place that is only designed to make us look good but does not have any educational merit at all. Also, I'm not sure there will ever be "no-stakes testing". Even if tests are intended to be no stakes, my experience has been that someone, somewhere will try to use the results for their own purposes. I like the idea, and I hope I am wrong, but I would be surprised to see assessments that someone didn't try to use for political reasons. I have seen many abuses of state assessments, so I guess I am a little skeptical.</p> <p>Finally, I agree that working on assessments can be a great professional development tool once you get everyone convinced that it is the thing to do. When I worked at a high school and served on a committee to develop local assessments for k-12 math, we found it very rewarding to see what was being taught at every grade level to make sure it lined up and there wasn't too much overlap. We also wondered why this hadn't been done before.</p>		
<p>3:37) 03-NOV-2000 12:39 Susan Doherty (squinnxx)</p> <p>&lt;&lt;aside&gt;&gt; You got it, Fred. If you type a complete url it will appear as a hyperlink. That followed link will open in a new window.</p>	<p>Gives directions: physical action on the part of the learner.</p>	<p>6-3</p>
<p>3:38) 03-NOV-2000 16:06 Jennifer Bay (jbay)</p> <p>Hi, Luke!</p> <p>I think that one of the downsides in</p>	<p>Personal Lecturing</p>	<p>5P-13</p>

Narrative	Analysis Categories	Code Line Count
<p>education is not really knowing what might be going on nearby. So, many schools and districts reinvent the wheel. My guess is that many schools have developed assessment programs locally. On the other hand, even though this might be reinventing the wheel, it promotes "by in" and, as you mentioned, is a great tool for professional growth. This happens at the state level, too, where much effort is made to do something very much another state is doing - as you might have noticed by the dialogue here about developing open-ended tests!</p>		
<p>3:39) 03-NOV-2000 16:40 Maurice Burke (burke)</p> <p>Hi Jennifer:</p> <p>A great example of a district-wide mathematics assessment program that is getting some interesting results is the one they started in Juneau, Alaska, several years ago. A person in the district office has borrowed a considerable pool of items from state and national sources and has used them as models in creating assessment items that get at the heart of the district standards. Teachers evaluate the assessments and the results are disaggregated in very usable ways with feedback to each math teacher in the district. It is not high-stakes, but as Luke stated, it is not "no-stakes" either. There are political ramifications any time assessment results are made public. I would be interested to know if other districts are doing the same thing...Sometimes it is worthwhile reinventing a wheel.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-18</p>
<p>3:40) 03-NOV-2000 16:46 Rick Norwood (rnorwood)</p> <p>It is possible to test understanding on easy-to-grade multiple choice tests. The math section of the GRE does that very well, and I'm sure the same type of question could be scaled down for any</p>	<p>Student share experiences and/or solutions</p>	<p>9s-18</p>

Narrative	Analysis Categories	Code Line Count
<p>grade. The story Fred Harwood tells about students who could do lightening addition but couldn't do addition "problems" is particularly poignant. We teach math very badly in this country, and there are two major reasons for this. First, we allow some incompetent teachers to continue teaching, which makes the job of everyone downstream from them almost impossible. Second, we try to cover too much material, instead of approaching the really important concepts, such as addition, in a variety of ways, so that the students can, as Fred says, transfer information into a variety of different settings.</p>		
<p>3:41) 03-NOV-2000 16:55 Jennifer Bay (jbay)</p> <p>Maurice,</p> <p>Are the results reported in a journal or on a web site that you know of? It sounds like an implementation of an idea mentioned here earlier this week - having a large bank of questions from which districts and schools can develop their own instruments. Also, the Balanced Assessment Project also developed assessment items, which are now available for purchase through catalogs. Perhaps the key is to have the right balance between what comes from outside the district and involvement within the district.</p>	<p>Gives or asks for Resources</p>	<p>5R-12</p>
<p>3:42) 03-NOV-2000 17:06 Jennifer Bay (jbay)</p> <p>Hi Rick!</p> <p>I appreciate your comment about multiple choice tests. Concepts vs. procedures is not synomous with multiple choice vs. open-ended. Either one can assess concepts or procedures. There are some things, however, that are better assessed in an open-ended format. For example, if one of the state goals (its one of our 3 major ones in Kansas) is communicating</p>	<p>Praises or Encourages</p> <p>Personal Lecturing</p>	<p>2-1</p> <p>5P-19</p>

Narrative	Analysis Categories	Code Line Count
<p>mathematics, that is hard to assess in that format (although that is what is done here - I haven't figured out how). Also, developing reasoning or proof.</p> <p>You have also hit on two critical systemic issues in teaching mathematics: effective preparation and ongoing professional development for teachers, and the breadth and depth of U.S. curriculum. Without the first (teachers that know content and pedagogy), it is unlikely to get the latter (studying content from a variety of perspectives).</p>		
<p>3:43) 03-NOV-2000 17:11 Jennifer Bay (jbay)</p> <p>Maurice, Rick, Luke, Fred, and others -</p> <p>Thank you for continuing to visit the panel - your dialogue has been a great contribution. In the end this has emerged to be like a small group discussion, though I have been told that others have logged on to read, just not to write. Just thought I would say that now, as the day is winding down (I will still continue to check in for a while - until Susan tells us we are officially "closed" :)</p>	Praises or Encourages	2-9
<p>3:44) 03-NOV-2000 17:35 Fred G. Harwood (fharwood)</p> <p>Yes, many questions can be designed to test understanding with higher-order thinking,(I find it to be about 20 minutes per good question in creation) however, if a student makes one small computation error or just guesses correctly . . .</p> <p>I admit I resort sometimes to a quick MC test from an ACCESS database. I try to tell myself it is for them to get used to the MC format that there final exam is in, but often it coincides with a busy weekend without time for heavy marking. Test generation is quick as well. If time = money then it is for cost effectiveness reasons but these must be balanced with a diverse selection of other</p>	Convergent Response	8c-14

Narrative	Analysis Categories	Code Line Count
assessments.		
<p>3:45) 04-NOV-2000 16:27 Rick Norwood (rnrwood)</p> <p>Admittedly, communications skills are hard to test. You could have a multiple choice between four or five attempts to communicate a mathematical idea. I suspect there is a correlation between achieving good communication and recognizing good communication. In the textbook I'm writing, I continually emphasize not just how you write mathematics but how you SAY mathematics. It is amazing how a little thing like not knowing that <math>x</math> prime and <math>x'</math> mean the same thing can throw a student off.</p> <p>The situation is similar in testing proofs. You can have students match steps and reasons. Or you can have them pick a good proof from a set of mostly falacious proofs.</p> <p>I do think communication is more important than proof right now. I would love my students to be able to prove theorems, but when they can't reason from <math>a &lt; b</math> to <math>b &gt; a</math>, I have to focus on communication first.</p> <p>-----</p>	Convergent Response	8c-21
<p>3:46) 04-NOV-2000 18:40 Brooke Bertholet (brooke)</p> <p>As a practicing teacher, I highly appreciate Fred's wonderful analogy that "transfer must be sheperded as the students build their scaffold of understanding." It is so difficult to achieve, for the kids must be willing participants in the construction of their own building. Yet, when accomplished, it is so rewarding to everyone. The antidote about great problem solvers leaving multiple choice questions blank is also very familiar to me. There is, as well, the reverse: the quick, and correct answer, on the multiple choice test without a clear ability to explain how the answer was</p>	<p>Convergent Response</p> <p>Initiated Comment</p>	<p>8c-19</p> <p>9i-37</p>

Narrative	Analysis Categories	Code Line Count
<p>reached. The stated response, often is: "well, because that's the answer." Is there such an appraisal system for the benefit of my students which truly shepards all approaches? Looked for the "Foundational Skills Assessment" referral, but couldn't locate it. Any referrals provided would be greatly appreciated.</p> <p>Exam questions geared toward higher-order thinking skills, even considering computational error and, even, sheer quessing, demonstrate a great deal about the mathematical achievement of the student. When a student tells me that she or he has guessed something, I ask why. The response always lends me an appreciation of their reasoning and an opening to direct their own self-questioning onto another path. Error in computation, at least with my population of students, often has to do with getting things down on paper quick enough. Going back through the simple arithmetic, the kids always pick-up on their own computational mistakes anyway. The beauty of the higher-order question, for the kids and I, is in their great chance for written and diagramatic expression. Simply, wholistic appraisal reflecting that which the students have sheparded with my (hopefully sound) guidance would be most appreciated by both them and by me.</p> <p>The priority which Rick gives to communication is just fantastic. Yet, my question would be: in which form does this communication take place? When my students write answers to rubric questions in their math journals, I can "demonstrate" that communication has taken place. Yet, the most fruitful communication, at least for my class and I, takes place in open discussion of mathematical concepts or between myself and an individual student. This is much harder to validate as a part of appraisal then if something were written, but is, at least in my mind, none the less equally valid. Would you have any</p>		

Narrative	Analysis Categories	Code Line Count
<p>suggestions as to how to empirically incorporate such dialogues into appraisal?</p> <p>Thanks. -----</p>		
<p>3:47) 04-NOV-2000 21:58 Fred G. Harwood (fharwood)</p> <p>I had a few students miss a partner, technology/statistics test and had them come in at lunch where I asked them a few questions and listened to them solve them while I kept a type of clinical notes on their efficiency/understanding etc. I then developed a percentage for the test. It gave me far greater depth of understanding of each student. Now it is totally impractical for me to do this with all 212 students but made for a great option for some and I try to get my students to do this more frequently in class activities with each other.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-12</p>
<p>3:48) 05-NOV-2000 12:15 Mari Muri (mmuri)</p> <p>This is my 'check-out' from these discussions. They have been very helpful to me as I wrestle with trying to make our statewide assessment more meaningful to students and teachers and parents. I firmly believe that we must have a mixture of MC and open-ended questions. The MC to do quick and efficient testing of factual knowledge. But, since in the real world we don't live in a MC format, I think it is critical to get students to show their work, discuss their strategies, explain their thinking, and so on. Only through this type of "discourse" can we prepare youngsters for the real world of everyday mathematics and give the state (or teacher in the classroom) an idea of the progress students are making in communicating their problem solving processes. Thanks for your varied opinions - it made for great dialog. Unfortunately I do not have contact information for "Foundational Skills Assessment." If any of our</p>	<p>Personal Lecturing</p>	<p>5P-22</p>

Narrative	Analysis Categories	Code Line Count
<p>readers/participants do, please add them at the bottom of this page. Thanks!! Mari</p>		
<p>3:49) 05-NOV-2000 16:18 Susan Doherty (squinnxx)</p> <p>Thank you Mari, Jennifer, and Diane. This has been a wonderful discussion!</p> <p>I will be leaving the session open for a few more days for any final thoughts. Look for new sessions opening this Monday Nov 6th.</p>	<p>Praises or Encourages</p> <p>Orientation Lecturing</p>	<p>2-2</p> <p>50-3</p>
<p>3:50) 05-NOV-2000 17:42 Fred G. Harwood (fharwood)</p> <p>Mari, BC's Foundational Skills Assessment setup and practice tests in pdf format can be gotten at through <a href="http://www.bced.gov.bc.ca/assessment/fsa/">http://www.bced.gov.bc.ca/assessment/fsa/</a></p>	<p>Factual Response</p>	<p>8f-4</p>
<p>3:51) 05-NOV-2000 17:51 Brooke Bertholet (brooke)</p> <p>Thanks, Mari, for presenting such an important and interesting session. I have learned a lot, and will do my best to incorporate back into my classroom for the kids everything I've gathered from this marvelous discussion.</p> <p>Thanks Fred,too, for the response to my question. It has been most helpful (I have been thinking about it all day) and will, too, turn this into something incorporated into my own practice. (Yes, those lunch times are important. Barely a time for your own sandwich). I don't have 212 students, for mine is a general Fifth Grade classroom. My "hats off" to you. Very sincerely.</p> <p>I hope I can get the kids to eventually conduct the type of appraisal you have presented among themselves. At ten years of age, the level of self-consciousness is very high. Yet, I know it can be done. My clinical notes follow the kids as they have communicated their</p>	<p>Convergent Response</p>	<p>8c-50</p>

Narrative	Analysis Categories	Code Line Count
<p>ideas to me. Yet, I'm sure what they share amongst themselves is more valuable to them personally and would, in turn, when shared, with me, make me a better facilitator of their own mathematical adventure.</p> <p>Unfortunately, Mari, I do know, as well, that we don't live nor practice in solely a MC format. The everyday world of mathematics, however, from the simple, the mundane, or the most profound, is as all mathematicians, throughout the centuries, have demonstrated through their art.... is that conclusions are reached, through the gift of reason which we all share, demonstrating the fabric of our world. This, I believe, is so whether my students and I are adding or subtracting decimals or (as of tomorrow morning) we are exploring the placement of data on a stem and leaf plot.</p> <p>Yet, other matters, which have very little to do with our in-class investigations alter the face of our accomplishments. Ideally, there is a medium where my kids can stand-up and say "this is my/our appreciation of what we have investigated mathematically and we are proud of it. We have built a large icosahedron from plaster board, we know how to form a sphere from paper, we know why you need a zero to hold place-value when subtracting decimals, because it has furthered the love we have for the world we live in."</p>		
<p>3:52) 05-NOV-2000 22:33 Steve Crandall (scrandall)</p> <p>Hello! I have been attending the National Middle School Association conference in St. Louis this weekend, and have had no opportunity to post to the discussion until now. This is a great forum and I would like to add a couple of my thoughts and experiences with testing.</p> <p>In Florida we now have high-stakes</p>	<p>Student share experiences and/or solutions</p>	<p>9s-45</p>

Narrative	Analysis Categories	Code Line Count
<p>testing. But for the first few trial years preparing the Florida Comprehensive Assessment Test, 8th grade and both language arts and math were tested and field tested until students and teachers were dizzy. Now that the testing dust has begun to settle, regular practice to prepare students for it is not at all unlike the Problem of the Day or Week or any other type of bell-ringer. And the identified standards allow teachers to build programs toward common goals, while allowing needed wiggle room for teacher personalities, students as unique individuals, and group dynamics in the school communities.</p> <p>My school also has "low stakes" testing, where students take a computerized assessment three times per year across three middle school years to provide data, not guesswork, in trending performance levels. This, too, requires some preparatory practise just to take; but, it is certainly a small amount of our 80 minute periods in a modified block where students take math every day all year.</p> <p>At the end of 7th grade we have Algebra for High School Credit placement tests (middle-stakes) and after 8th they take Algebra Finals for that credit(high-stakes). We identify and encourage some students to take ACT or SAT tests for the Talent Identification Program, and possible summer college program placement (high-stakes).</p> <p>In addition to the state tests, 8th grade takes nationally norm referenced tests; all told and tolled, this is a lot of testing for this one academic year! But I do not feel that we spend too much time preparing, when that practice time is a few minutes each day on standard-based problems which will weave into the curriculum for overall strength.</p> <p>Yours, Steve</p>		

Narrative	Analysis Categories	Code Line Count
<p>3:53) 06-NOV-2000 12:37 Rick Norwood (rnorwood)</p> <p>I think one of the most important things to do in assessing how much mathematics the students have learned is to have them communicate in many different ways. For example, have them explain the commutative law of addition in a written sentence that does not use any mathematical symbols. Have them explain it entirely in symbols, without using any words. Have them explain it orally. Have them teach it orally to a younger student who does not know it already. Have them give an example of it. Have them explain it in pantomime, without using any words.</p> <p>If they can do all of these things, then they really understand the commutative law. If not, not.</p>	Convergent Response	8c-15
<p>3:54) 07-NOV-2000 09:56 Mari Muri (mmuri)</p> <p>Thanks for the URL to BC items, Fred! And, Steve, glad you could join us. Hope you'll find the discussions we had going on helpful! Brooke, really appreciated all of your participation. Mari</p>	Praises or Encourages	2-5
<p>3:55) 10-NOV-2000 20:10 Marge Petit (mpetit)</p> <p>This has been a very interesting discussion. I want to take the opportunity to respond to a couple of comments.</p> <p>Item Bank: This has the potential to provide schools and states with a much needed tool. In Vermont we are allowing schools to include local assessments (including the Vermont portfolio) as a part of the state level accountability system because we value school and classroom assessments. However, the capacity - time \$ - and skill - to build these local assessments is limited. A large item bank from which to draw would facilitate this process.</p>	Convergent Response	8c-59

Narrative	Analysis Categories	Code Line Count
<p>Constructed response questions: A well developed assessment asks students questions similar to questions that would be asked in the classroom on a regular basis. If this is the case than a discussion about teaching to the test is unnnecessary. This is an important reason why the inclusion of "quality" constructed response questions on large scale assessments is so important. As Diane Briars mentioned - there are some good standards based national assessments that do drive good instructional practices and provide teachers and schools with valuable information when used along with other local data.</p> <p>State comparisons: Except for the National Assessment of Educational Progress (NAEP) there are presently NO assessments that provide state by state comparisons. The norm-referenced tests presently on the market (Terra Nova, SAT9, ITBS) all provide scores that compare a school or student's performance to a national sample of test takers. This is not the same as students in every state taking the same test and then state scores being aggregated for comparison purposes.</p> <p>Comprehensive local assessment systems: The real challenge is to provide schools with not just items but a set of assessment tools that together give the information needed at the classroom level for instructional purposes and at the school level for program improvement. The tools should include ongoing - classroom embedded assessments - that give the teacher and student feedback on the student's progress to attaining specific skills or concepts et al. It should include assessment tools, like a portfolio, that provide a broad picture of student performance across time or on a specific skill across time - like problem solving. It should include large scale assessments that provide information on the school's</p>		

Narrative	Analysis Categories	Code Line Count
<p>performance in comparison to a set of state or national standards.</p> <p>A comprehensive assessment system should be the ultimate goal - one that is linked to the standards at all levels and is valued by all.</p> <p>Marge</p>		
<p>3:56) 12-NOV-2000 22:54 Susan Doherty (squinnxx)</p> <p>Mari Muri sent along this document...</p> <p>10 PRACTICAL STRATEGIES FOR PREPARING STUDENTS FOR THE CMT</p> <p>Preparing Connecticut's students for the Connecticut Mastery Test (CMT) should be an ongoing process. While it is certainly appropriate to conduct some form of review during September of 4th, 6th, and 8th grades, this "cramming" is far less effective than an ongoing set of instructional practices that naturally and continually prep are students for the test specifically and for higher levels of understanding generally. A sound K-8 mathematics program embeds these strategies into all instructional planning.</p> <p>Strategy 1: Asking "Why?"</p> <p>Probably the best way to implement a "thinking curriculum" - a curriculum that is language-rich, that focuses on meaning and that values alternative approaches - is by regularly asking students, "Why?" A simple, "How do you know that, Aida?" or "Jeff can you explain how you got your answer?" or the basic, "Can you explain to the class why you think that?" form the basis of a mathematics curriculum that goes beyond merely correct answers. A student who can explain his or her answer often has a stronger understanding of mathematics and can help other students develop understanding. Questions like, "How did you get 17, Jen?" or "Why did you add,</p>	<p>Gives or asks for Resources</p>	<p>5R-242</p>

Narrative	Analysis Categories	Code Line Count
<p>Mike?" give students important opportunities to communicate their understanding and give teachers powerful tools to assess the degree of understanding. Classrooms where students are regularly explaining how and why - in groups and in whole-class discussions - are classrooms that effectively prepare students for many of the open-ended items on the CMT.</p> <p>Strategy 2: Embed in context/present as a problem</p> <p>Consider the vast difference between "Find the quotient of <math>20 \div 1.79</math>" on the one hand and "How many Big Macs - each costing \$1.79 - can be purchased if you have a \$20 bill?" Both problems expect that students can divide. However, the former directs students to a single long division algorithm with a three-digit divisor that is not expected for mastery on the CMT. The latter places the mathematics in a context, and expects students to understand that division is an appropriate operation to use to solve a practical problem that most can relate to. In addition, the latter encourages estimation and raises the issue of sales tax - all of which is assessed on the CMT. But most importantly, the latter contextualized problem shows students that mathematics is a useful tool. That is the main reason why so many of the CMT items are problems set in realistic contexts.</p> <p>Strategy 3: Ongoing cumulative review</p> <p>Almost no one masters something new after one or two lessons and one or two homework assignments. That is why one of the most effective strategies for fostering mastery and retention of critical mathematical skills is daily, cumulative review at the beginning of every lesson. Some teachers call this warmups. Others call it daily mini-math. Some days it is delivered orally, other days it is written on the board or displayed on an overhead</p>		

Narrative	Analysis Categories	Code Line Count
<p>transparency. But, every day, it is five and eight quick problems to keep skills sharp. Every day teachers present:</p> <ul style="list-style-type: none"> <li>o a fact of the day (e.g.. 7 x 6);</li> <li>o an estimate of the day (e.g.. what is a rough estimate of the cost of 55 items at \$4.79 each?);</li> <li>o an measure of the day (e.g., about how many meters wide is our classroom?);</li> <li>o a place value problem of the day (e.g., what number is 100 more than 1584?);</li> <li>o a word problem of the day; and</li> <li>o any other exercise or problem that reinforces weaker, newer or problematic skills and concepts.</li> </ul> <p>This form of review - often patterned after the types of items and item formats used on the CMT - embeds review for the test in what is recognized as sound instructional practice.</p> <p>Strategy 4: Ensure a language-rich classroom</p> <p>Like all languages, mathematics must be encountered orally and in writing. Like all vocabulary, mathematical terms must be used again and again in context until they become clearly internalized. Just as young children confuse left and right until they develop strategies and connections to distinguish between the two, older children confuse area and perimeter until they link area to covering and perimeter to border. That is why a "language-rich" classroom, in which triangle, quotient, factor, sum, bar graph, mixed number, etc. regularly arise in discussions, while solving problems and are written or posted somewhere in the room, can make a difference in how effectively children learn mathematics. The vocabulary word lists found on pages 85-87 of this handbook should be used to check that the vocabulary used and expected on the CMT is never new to students.</p>		

Narrative	Analysis Categories	Code Line Count
<p>Strategy 5: Use every number as a chance to build number sense</p> <p>Since the development of number sense - a comfort with numbers that includes estimation, mental math, numerical equivalents, a sense of order and magnitude and a well-developed understanding of place value - is one of the overarching goals of mathematics, it follows that instruction that develops number sense must be an ongoing feature of all instruction. A perusal of the CMT specifications reveals how much of the test focuses on these critical number sense understandings. A simple strategy for incorporating number sense development into all instruction is to pause regularly and - regardless of the specific mathematics being taught - ask questions such as:</p> <ul style="list-style-type: none"> <li>o Which is most or greatest? How do you know?</li> <li>o Which is least or smallest? How do you know?</li> <li>o What else can you tell me about those numbers? (For example, "They are both odd." "All are mixed numbers. "Their product is about 18 because you can round."</li> <li>o How else can we express .2? (2/10, 1/5, 20%, .20)</li> </ul> <p>Incorporating this strategy into daily instruction takes a mind-set that the numbers in every problem posed and in every chart or graph used can be used to strengthen and reinforce number sense. For example, in a simple word problem that asks students to find the sum of 57 and 67, teachers can first "pluck" the numbers from the problem and then ask students to list four things they can say about the two numbers. Consider how much mathematics is reviewed when students suggest such things as:</p> <ul style="list-style-type: none"> <li>o I see two two-digit numbers.</li> <li>o Both numbers are odd.</li> </ul>		

Narrative	Analysis Categories	Code Line Count
<p>o There is a difference of 10 between the numbers.</p> <p>o The 67 is greater than the 57.</p> <p>o The ones digit is the same and the tens digit is one apart.</p> <p>o One number is prime and the other is composite.</p> <p>o I see 124.</p> <p>Strategy 6: Draw a picture (mental or real)</p> <p>We casually say that "a picture is worth a thousand words" but too infrequently tie mathematical concepts to their pictorial representations. That is why a significant proportion of the CMT asks for pictorial equivalents of mathematics ideas. A powerful way to help students visualize the mathematics they are learning, or to reinforce understanding, is with pictures that students actually draw or create mental images of. Consider how seldom we ask students to "Show me with your hands about eight inches" or "Use your fingers to show me an area of about 10 square inches." Consider how important it is that students can draw pictures of fractions and mixed numbers like <math>\frac{3}{4}</math> or <math>2\frac{1}{2}</math> and of decimals like .3 and 1.2. Consider how powerful a class discussion about the different pictures for "three-quarters" can be when students show three quarters (25 cent pieces), a shaded pizza pie, a window pane, three stars out of four shapes, a ruler, a measuring cup and simply <math>\frac{3}{4}</math>! Consistently embedding, "Can you draw a picture of..." and "Can you show me what that would look like" into instruction can pay rich benefits in both student understanding as well as Mastery Test scores.</p> <p>Strategy 7: Build from graphs, charts, and tables</p> <p>Many real-world applications of mathematics arise from the data presented in graphs, charts, and tables. That is why so many of the Mastery Test items are based on data and include</p>		

Narrative	Analysis Categories	Code Line Count
<p>graphs, charts, and tables. To best prepare students for both these contexts as well as to develop essential skills of making sense of data and drawing conclusions from data that is presented in graphs, charts, and tables, teachers are encouraged to make far greater use of these forms of data presentation. Given a graph or a table, students can be asked (similar to Strategy 5) to identify five things they see in the graph or table. In addition, students can be asked to draw two appropriate conclusions from the data and justify those conclusions. So consider "milking" the graphs and charts found in your textbook, or data that students find during "data scavenger hunts," by copying the graph, chart or table for students and asking them to create five questions that could be answered by the information in the graph or table. Ask students to share their questions with each other and generate a list of the best questions for future use.</p> <p>Strategy 8: How big? How much? How far?</p> <p>No strand of mathematics assessed on the Connecticut Mastery Test is consistently as weak as the measurement strand. Rather than leave all measurement to a single chapter that is often skipped entirely or relegated to the end of the year, teachers are encouraged to make measurement an ongoing part of daily instruction. First, questions like How big? How much? How far? How heavy? all help to develop measurement understanding. Second, measurements of things such as arm span, book weight, area of circles or breath-holding times all provide great sets of data and, therefore, use measurement to gather data that is analyzed and generalized - integrating many important aspects of mathematics. Finally, more involved projects like determining the number of students that can fit in a classroom or the number of hours students have been alive are</p>		

Narrative	Analysis Categories	Code Line Count
<p>wonderful opportunities to keep measurement on the front burner of daily instruction.</p> <p>Strategy 9: Minimize what is no longer important</p> <p>A significant amount of time and energy is still expended by teachers and students on skills no longer considered important and not assessed on the CMT, the Connecticut Academic Performance Test (CAPT) or even the SAT! District mathematics curriculums must become more focused on what is truly valued, and teachers must give themselves and each other permission to skip textbook pages that no longer serve useful purposes. In fact, the proverbial "mile-wide, inch deep" curriculum that results in far more coverage of topics than mastery of key concepts undermines many efforts to raise student achievement - In addition, time that is no longer spent on increasingly irrelevant skills - particularly those currently done most often with a calculator - frees up valuable minutes and hours for increasingly important skills like estimation, algebraic reasoning and problem solving. So carefully review what is NOT assessed on the CMT - for example, complex multi-digit computation - and redirect what is taught to focus on those skills and concepts that have lasting value and that ARE assessed.</p>		
<p>3:57) 12-NOV-2000 22:58 Susan Doherty (squinnxx)</p> <p>Apparently, number 10 didn't come through on the fax! Perhaps Mari can fill us in!</p>	Orientation Lecturing	5O-10

<b>Praises or Encourages</b>	<b>2-63</b>
<b>Formulates directions for learning</b>	<b>3f-47</b>
<b>Asks Convergent Questions</b>	<b>4c-4</b>
<b>Asks Evaluative Questions</b>	<b>4e-4</b>
<b>Asks Factual Questions</b>	<b>4f-5</b>
<b>Asks for Sharing of experiences</b>	<b>4s-3</b>
<b>Factual Lecturing</b>	<b>5f-266</b>
<b>Orientation Lecturing</b>	<b>5O-66</b>
<b>Personal Lecturing</b>	<b>5P-148</b>

<b>Gives or asks for Resources</b>	<b>5R-272</b>
<b>Gives directions: physical action on the part of the learner</b>	<b>6-6</b>
<b>Convergent Response</b>	<b>8c-291</b>
<b>Factual Response</b>	<b>8f-21</b>
<b>Initiated Comment</b>	<b>9i-118</b>
<b>Student share experiences and/or solutions</b>	<b>9s-142</b>

**Main House Home**

**Table # 75: Main House Home, Item 4, Classroom Assessment: Issues of Prof Development**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb 2000 Panel 2: Classroom Assessment: Issues of Prof Development</p> <p>Main House Item 4</p> <p>Item 4 17-OCT-2000 13:54 Susan Doherty (squinnxx) Panel 2: Classroom Assessment: Issues of Professional Development</p> <p>Opens Monday, November 6th</p>		
<p>4:1) 17-OCT-2000 14:00 Susan Doherty (squinnxx)</p> <p>The Panelists</p> <p>George Bright is professor of mathematics education at The University of North Carolina at Greensboro. In 1998 he and Jeane Joyner edited the book, "Classroom Assessment in Mathematics: Views from a National Science Foundation Working Conference," and authored the book, "Focusing on Classroom Assessment."</p> <p>Meg Meyer was involved in the development of Mathematics in Context. Her work included writing, editing, and revising of student and teacher materials and the coordination of professional development for MiC pilot and field-test teachers. Since the completion of MiC, she has directed the MiC implementation satellite as part of the NSF funded Show-Me Center Project.</p> <p>Jeane Joyner is a Senior Educational Planning and Development Consultant, North Carolina Public Schools as well as an instructor for the</p>	Orientation Lecturing	50-44

Narrative	Analysis Categories	Code Line Count
<p>Principals Executive Program and Assistant Principals Executive Program.</p> <p>Dr. Michael Chappell is an Associate Professor and teaches methods courses for elementary, middle grades, and secondary pre-service students of mathematics education, as well as graduate courses related to trends in education and research practices in mathematics education.</p> <p>Dr. Rodney McNair is an Associate Professor of Mathematics at Delaware State University. Dr. McNair's research includes a focus on the assessment of classroom learning as a function of student participation, classroom discussion, and students' interpretation of classroom activities.</p> <p>Dr. Rick Norwood is an assistant professor at East Tennessee State University. His research interests are knot theory and logic. He has helped to design a course for education majors titled "Logic, Problem Solving, and Geometry". His hobbies included science fiction and classic comic strips.</p>		
<p>4:2) 05-NOV-2000 20:56 Susan Doherty (squinnxx)</p> <p>Welcome, everyone! Let's get started with a quick go around the virtual table with this question. What is classroom assessment? George?</p>	Asks Factual Questions	4f-4
<p>4:3) 05-NOV-2000 20:57 George Bright (gbright)</p> <p>Classroom assessment is the process by which a teacher learns about what students know so that instruction can be improved. Classroom assessment is about gathering information about students' thinking so that instructional decisions are better aligned with what students know and can do. Classroom assessment is local to a particular classroom, and it is focused on helping students learn more. It is virtually independent of evaluation of students.</p>	Factual Lecturing	5f-10
<p>4:4) 05-NOV-2000 20:58 Meg Meyer (mmeyer)</p> <p>Classroom assessment includes the informal</p>	Factual Lecturing	5f-9

Narrative	Analysis Categories	Code Line Count
<p>and formal activities that teachers engage in to determine what students understand, believe, know and can do in mathematics. These activities include gathering evidence during and after instruction, analyzing and interpreting that evidence, providing feedback to students, and making instructional decisions based upon the evidence.</p>		
<p>4:5) 05-NOV-2000 20:59 Jeane Joyner (jjoyner)</p> <p>I'll go next.</p> <p>I like to think of classroom assessment as what teachers do - formally and informally - to gather information about what their students are thinking, what the students understand, and what students can do (and how well students can do it).</p> <p>Classroom assessment is "sitting beside" students, having conversations, providing feedback, and most importantly looking carefully at students' work in order to monitor their progress and make decisions about how to help them continue to move toward greater depth in understanding and more proficient use of the mathematics they are learning.</p>	Factual Lecturing	5f-15
<p>4:6) 05-NOV-2000 21:02 Michaele Chappell (mchappell)</p> <p>Generally speaking, classroom assessment represents the collective actions that teachers might take to obtain a "reading" or "sense" about the mathematical understandings of their students. This "reading" or "sense" may initially come about through informal ways, followed by more formal actions. In fact, such assessment that "paints a true picture" of what mathematics students know and are able to do is often generated through informal means (e.g., questioning students; having them explain and verify; observing their mathematical activity in whole- or small-group settings). In many instances, these informal means equip teachers with a better feel for their students' mathematical knowledge than more formal ways (e.g., classroom tests; school/district-wide standardized measures) that are conducted artificially. For example, in my mathematics</p>	Factual Lecturing	5f-41

Narrative	Analysis Categories	Code Line Count
<p>education methods courses, preservice teachers often have opportunities to carry out tasks during our discussions; observing their performance of these tasks and asking them "probing" questions along the way provide me with some immediate knowledge about how, and the extent to which, they understand the concept(s).</p> <p>An important aspect of classroom assessment to mention here is the notion of the degree to which a teacher uses that "reading" to alter his or her mathematics instruction. This is critical as classroom assessment should never be the "end all and be all" in capturing students' knowledge in mathematics. What teachers learn about their students' understandings must fold back into their mathematical instruction (i.e., planning what and how topics will be taught, selection of tasks, etc.). Then (and only then) can assessment operate in the classroom at its optimal level, benefitting both teacher and student.</p>		
<p>4:7) 05-NOV-2000 21:04 Rodney McNair (rmcnair)</p> <p>Yes, if we are trying to assess the students' learning then we are led in one direction, but if we are trying to assess the learning process then we must consider a different set of issues. In the contexts of a classroom implementing a particular curriculum we might consider;</p> <p style="padding-left: 40px;">How do(are) students learn(learning)? What are they learning? How are students participating in the classroom? What roles do students and teachers play? How can learning be optimized given these students and this curriculum?</p>	Asks Convergent Questions	4c-13
<p>4:8) 05-NOV-2000 21:15 Susan Doherty (squinnxx)</p> <p>Thank you. I'm seeing a lot of agreement here. So, what about the teachers? How much mathematics do they need to know in order to implement classroom assessment effectively?</p>	Asks Factual Questions	4f-4

Narrative	Analysis Categories	Code Line Count
<p>4:9) 05-NOV-2000 21:16 Jeane Joyner (jjoyner)</p> <p>I'll take that one.</p> <p>Teachers need an understanding of the mathematics they are teaching (and where the mathematics is heading) and also a basic "assessment literacy" that includes an understanding of assessment as it is linked to instruction.</p> <p>For example, they need to recognize that assessments should be created for specific purposes (to diagnose, to monitor, to guide instructional decisions, to evaluate), because how the assessment data will be used should influence the way in which the data are gathered.</p> <p>The issue of "how much mathematics should a teacher know" links directly to what are the instructional goals and what will it look like when students have accomplished these goals. A deep understanding of the mathematics being taught allows teachers to recognize "novice" understandings and errors, feel comfortable with students' reasoning and invented strategies, and have a sense of how to choose tasks and direct discourse that will help students learn the mathematics.</p>	Factual Lecturing	5f 24
<p>4:10) 05-NOV-2000 21:18 Rick Norwood (rnorwood)</p> <p>A broad and deep understanding of math is consistent with the CMBS recommendations on Teacher Preparation (Focus V20 N6 p7).</p>	Factual Lecturing	5f-3
<p>4:11) 05-NOV-2000 21:22 Rodney McNair (rmcnair)</p> <p>I think deep is the key word here. It may not be necessary for a teacher to know algebra to teach arithmetic. What may be more important is how well they know arithmetic, or any other content they may teach. A deep understanding of counting and grouping allows teachers and students to see other mathematics concepts as special cases of what they already know.</p> <p>If teachers are going to assess students'</p>	Factual Lecturing	5f-22

Narrative	Analysis Categories	Code Line Count
<p>learnin the learning process then they don't need to know where the student is going to be next year or four years down the road. They need to know where their students are now and how to continue to develop the students' current understandings. This requires knowledge of the content being taught. Vertical knowledge of the curriculum is useful to the extent that it helps to provide a context for the content that is being taught, however, it is usually lower levels of mathematics that provide a context for learning more advanced mathematics.</p>		
<p>4:12) 06-NOV-2000 12:27 Rick Norwood (rnorwood)</p> <p>I am currently teaching a class in Logic, Problem Solving, and Geometry for K-8 education majors.</p> <p>One of the biggest problems some of these students have is with recognizing when two sentences say the same thing in different ways. As an example, chosen at random from a test I gave last week, a student asserted that the statement "It is not the case that this is either a star or a planet." means "If this is not a star then it is a planet." This is by no means an isolated example, it is typical of about half the class, all of whom have spent a the past six weeks trying to learn the skill of rephrasing statements in different forms without changing the meaning. The other half of the class instantly grasps the difference between the two statements given above, and answers the question correctly. My concern is this. When the students who have a great deal of difficulty telling when two sentences say the same thing become teachers, if they become teachers, how are they going to assess their students in the area of mathematics. I am afraid that the answer is that they are going to ignore the NCTM Standards, and focus instead on rote learning of "math facts", where an answer is a number that is either right or wrong. Even here, they may mark .5 wrong if the answer key says that the right answer is 1/2. It is a big problem. Any ideas about a solution?</p>	<p>Personal Lecturing</p>	<p>5P-30</p>
<p>4:13) 06-NOV-2000 12:50 Wilhelmina "Billie" Mazza (billiemscd)</p>	<p>Initiated Comment</p>	<p>9i-26</p>

Narrative	Analysis Categories	Code Line Count
<p>In answer to Rich Norwood's last questions, I offer the following thoughts. It sounds like you are at a university where the education and math departments communicate and perhaps even share teaching responsibilities, especially for elementary education students. I am well acquainted with a large-well-known university where the communication between the two departments is limited to a select few professors. The teaching of the math courses required for elementary education majors is left to graduate students who are interested in becoming "mathematicians." It seems as if many of these "mathematicians" do not have a clear sense of what it means for elementary children to learn math because it has never been a struggle for them! When these people are the ones who plan and/or present the mathematics classes that are intended for the future elementary teachers, there is little to no attention to knowledge of how children learn. Those who come to the experience with a weak background in mathematics leave in the same (or perhaps worse) state of mind about math. Hence, I believe that any solution will have to reach far beyond the education departments.</p>		
<p>4:14) 06-NOV-2000 14:37 Rick Norwood (rnorwood)</p> <p>It's "Rick", by the way, not "Rich", Billie.</p> <p>You make an excellent point. We have always tried to foster strong communication between the math department and the departments we serve. If there is non-communication, or even hostility, between the people who teach and the people who are taught, then very little will be accomplished. In particular, I think Departments of Education should ask that the Departments of Mathematics be very careful about who they choose to teach the "Math for Teachers" course.</p>	<p>Acknowledges Student Ideas</p>	<p>3a-12</p>
<p>4:15) 06-NOV-2000 15:37 Jennifer Bay (jbay)</p> <p>Hi Rick,</p> <p>Yes, there has to be communication between the two. I think there has to be more done than</p>	<p>Student share experiences and/or solutions</p>	<p>9s-24</p>

Narrative	Analysis Categories	Code Line Count
<p>making requests across colleges. I have found that the department of mathematics and the department of elementary education operate under different belief systems about how to teach and what to teach our college students. At Kansas State University, we have a funding from the Department of Education to partner with local teachers, college of education faculty, and content specialists (e.g., mathematicians). This summer we met for two weeks. The mathematicians did not know how a methods course could be different from a "math for elementary school teachers" course. Through that dialogue and our monthly meetings we are beginning to explore issues of instructional approach and learning theories.</p> <p>Today one of the mathematicians visited my class. I go to his class on Wed. This is very time-consuming, but is helping our communication and goal setting. Eventually we hope it will impact what is taught and how it is taught in the classroom. This is a slow and shakey process...</p>		
<p>4:16) 06-NOV-2000 15:44 Rick Norwood (rnrwood)</p> <p>Hi Jennifer,</p> <p>It sounds like you are embarking on a very important process. Can you say more about how the two belief systems differ?</p>	Asks Convergent Questions	4c-3
<p>4:17) 06-NOV-2000 16:13 Brooke Bertholet (brooke)</p> <p>I appreciated, very much, George's insight that "classroom assesment is local to a particular classroom, and it is focused on helping students more." I've wondered today, though, if the issue of communication, at whatever level, should be more appropriately addressed as one of inter-communication. My students are able to communicate all sorts of mathematical ideas, yet if I am not too, as their teacher, a participant in the dialogue, having my own mathematical reasoning questioned and checked by them, then the topic of appraisal becomes one-sided. They need to "locally" appraise me as they know I am, in turn, appraising them. Is this not</p>	Divergent Response	9d-21

Narrative	Analysis Categories	Code Line Count
<p>what mathematical inquiry is about, in the first place? Any thoughts on this would be greatly appreciated. Maybe once communication between the authority and the apprentice becomes more balanced, markers for assesment to be given to either parents or the public would become much clearer.</p>		
<p>4:18) 06-NOV-2000 16:28 Meg Meyer (mmeyer)</p> <p>I too sense a lot of agreement about the amount of mathematics we want teachers to know in order to be effective in classroom assessment. We want it all: depth and breadth. But let's face it, that is not the reality in most classrooms. Teachers at the elementary level seldom have the content knowledge that we would like them to have. Likewise, the secondary teacher might have the content of the "Math Major", but often lacks the ability to connect that understanding to student responses.</p> <p>All the content knowledge in the world will not be enough unless teachers (new and experienced) learn how to pose questions, how to listen to children, and how to reflect on what children say and translate this understanding into instruction that begins with the student. These abilities do not come overnight. Teachers need to know that it is ok to struggle with interpretating a child's response. If the students are engaged with solid mathematics and asking good questions, the time will certainly come when a student will say something that the teacher does not understand. What the teacher does at that point can make all the difference in establishing a classroom that is a community of learners. I can talk more about this if anyone is interested, but for now I just want to get these ideas out to you and see what others have to say.</p>	<p>Factual Lecturing</p>	<p>5f-29</p>
<p>4:19) 06-NOV-2000 17:03 Luke Dowell (ldowell)</p> <p>Brooke,</p> <p>I agree that it is vital for communication to go both ways. I think this is what some people refer to as a "Socratic Dialog". The idea is, as I understand it, for teachers and students to discuss the concepts in a way that both parties are posing and answering questions on the</p>	<p>Convergent Response</p>	<p>8c-17</p>

Narrative	Analysis Categories	Code Line Count
<p>same level. The problem with most math classes is that the students and teachers are on totally different levels. I have students write in my math classes so they can learn how to communicate mathematically so we can be on the same level. I don't know how effective this has been overall, but I see some positive results in certain students. I tell students that it is no longer enough to know the concepts, they must be able to communicate that knowledge and understanding to others.</p>		
<p>4:20) 06-NOV-2000 17:49 Roberta W Grenz (robin)</p> <p>Rick, Billie, et al - I teach at a community college where we have 2 courses for prospective elementary and middle school teachers - "Number Concepts for Elementary School Teachers" and "Statistical and Geometrical Concepts for Elementary School Teachers". They are both required courses, run by the math department! We require instructors for this course (all full-time faculty) to have a degree in mathematics, and prefer some education work and/or experience. Of course, all faculty must have at least a Masters degree. We teach these courses with a strong emphasis on having the future teachers understand the concepts at the college level and being able to then work on "justifying" algorithms, using related explorations and investigations at the elementary school level, etc. Coming from another part of the country, I was really please to see these courses, and now that I am teaching them, I am amazed at the results. Our students come in, generally not pleased that they have to take a math course, and leave with the desire to go right out and teach math. The math that they now "own" is also outstanding - they say that they wish they had had math classes like these when they were young! A big part of this success , I feel, is that these courses are IN the MATH department.</p>	<p>Student talking to student</p>	<p>9t-28</p>
<p>4:21) 06-NOV-2000 19:06 Fred G. Harwood (fharwood)</p> <p>Regarding 16-18, one area around Vancouver, BC, has their local college meet with the secondary math teachers once every one or two</p>	<p>Convergent Response</p>	<p>8c-15</p>

Narrative	Analysis Categories	Code Line Count
<p>months to discuss math and math ed together. I've been jealous of this articulation. We tried it in Richmond with our local college and had two teachers attend with 3 from the college. Are other regions having initiatives like these for dialogue between college/university and high school and/or between elementary/middleschool/ highschool etc.? I've taught the teachers at two elementaries on some of the investigations and algorithm building activities that I do but that is all we've accomplished.</p>		
<p>4:22) 06-NOV-2000 19:22 Fred G. Harwood (fharwood)</p> <p>Here is a quick activity that might stimulate item #20 from Roberta:</p> <p>Write down the following two digit numbers multiplied by themselves in vertical columns (as in the regular multiplying algorithm), using a calculator, write in the answers below each multiplying and study them for a shortcut to do the second set quickly without a calculator.</p> <p>Set I: 25x25, 45x45, 85x85, 15x15, 35x35</p> <p>Set II: 65x65, 75x75, 95x95 and even 105x105 - articulate your shortcut</p> <p>Generate some questions you have, or things that you are wondering about. [You might want to ignore the rest of this post until you do some exploring of your own questions. If time or puzzlement is an issue, then try the next steps.]</p> <p>"What if the shortcut works, not because the two numbers end in 5 but that they end in numbers that add up to 10 (our base number)?"</p> <p>Set III: Set these questions in vertical columns and get the answer from the calculator and check for your shortcut continuing to work</p> <p>OR</p> <p>Utilize your shortcut in these new situations and verify on a calculator. 37x33, 44x46, 84x86, 23x27, 51x59 (careful!)</p>	<p>Student share experiences and/or solutions</p>	<p>9s-42</p>

Narrative	Analysis Categories	Code Line Count
<p>Set IV: "What if the two ones'digits don't add to 10?" Try the following set with your shortcut, then get the correct answer from the calculator and record it underneath your shortcut's answer. What is wrong with the shortcut answer? Place this difference below the two answers and modify your shortcut algorithm to work in these new situations.</p> <p>Step V: Generalize your algorithm in words and then prove that it works in an general, algebraic setting with symbolic representation.</p> <p>The first four sets can be done in intermediate and above classes. I haven't tried the algebraic below Gr. 9 &amp; 10. Answers to the above exercise are available upon request but only after you've tried the quick activity yourself! :-) Fred</p>		
<p>4:23) 06-NOV-2000 19:23 Fred G. Harwood (fharwood)</p> <p>Oops, I forgot the examples for the last set:</p> <p>Set IV:</p> <p>32x38, 32x37, 53x58, 55x57, 52x56, 74x79 etc.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-4</p>
<p>4:24) 06-NOV-2000 21:38 Steve Crandall (scrandall)</p> <p>Hello!</p> <p>What about assessment of mathematical reading skills (and related writing skills)? If students cannot write and explain equations much less transformation of equations, then how can we expect them to read and understand ANY of the examples in textbooks which use transformation of equations so heavily?</p> <p>I believe students skip over examples in texts just for this reason - the inability to "read" them! Even trained adults may quit a book at the rate of half of the readers for each equation in the text, as Stephen Hawking wrote. And as students take more advanced classes with "higher" reading levels, the equations get more complex and reasoning more rigorous.</p>	<p>Convergent Response</p>	<p>8c-22</p>

Narrative	Analysis Categories	Code Line Count
<p>Now our high-stakes tests put a premium on showing work and writing explanations of the equations/graphs/diagrams/etc. I believe in my own success with stressing the need to learn how to communicate math as both output and input skills, but is there research (explicit OR intuitive) you can direct me to? Thanks a 10^6! Steve</p>		
<p>4:25) 07-NOV-2000 08:05 Rick Norwood (rnrwood)</p> <p>The saddest thing that is reported to me is that there are still a lot of K-8 teachers whose official policy is: NO QUESTIONS. If you want to know something, don't ask me, read the book. Evidently there are still too many teachers who feel threatened by interactions with their students, and prefer to teach with overheads and assess with scantrons. However, it is almost certain that no teachers of that type are at this conference, so I'm not sure what we can do about it.</p>	Convergent Response	8c-11
<p>4:26) 07-NOV-2000 09:44 Fred G. Harwood (fharwood)</p> <p>With cooperative groups trying to solve problems, I'll have competitions for which group makes the best presentation of their solution or I tell them that I'll mark one paper from each group to give the members a mark. They then work together wording and displaying their best corporate solution. I get the students to teach each other and expose them to a wider variety of presentation.</p> <p>With teachers, some of us can utilize a school based assessment or accreditation process to introduce and practise something with the other teachers. We have to be like a virus, not preaching but sharing what our kids are doing. Every teacher has some professional sera in them that, once pumping, will get them searching, risking and growing.</p>	Student share experiences and/or solutions	9s-17
<p>4:27) 07-NOV-2000 10:14 George Bright (gbright)</p> <p>I think one issue that has been overlooked in the discussion is the way that information from</p>	Divergent Response	9d 08

Narrative	Analysis Categories	Code Line Count
<p>classroom assessment affects instructional decisions made by the teacher. How can we help teachers to use their knowledge of students' thinking to make better decisions? And how do we know if the decisions are really better?</p>		
<p>4:28) 07-NOV-2000 11:20 Luke Dowell (ldowell)</p> <p>In response to George's last question:</p> <p>I think the best way to help teachers use their knowledge of students' thinking to make better decisions is through practice. I don't how practical it is, but I think the most effective thing is to have professional development where teachers can learn about and discuss alternative strategies based on what they find out during assessment, whether formal or informal. Then give them the chance and the courage to try different things in the classroom. Follow up discussions would allow them to discuss what seemed to work and what didn't. My opinion is that an effective teacher models problem solving everyday because they are constantly making decisions and adjusting according to how the students are doing that day. What works for one student or class may not work for the next, so teachers need to learn to be flexible and change gears if needed.</p> <p>For me, I had to get over my fear of not staying on schedule or doing things the way other teachers do them and focus on my students' understanding of the concepts. That is the number one priority. Now I am constantly trying make better decisions in the classroom. I try to use strategies and ideas I get from classes, conferences, articles, and other teachers here at school whenever I can. Sometimes I don't make the right decision, so I go back and try to correct it later. But when I find something that works, I write it down to try it the next time around. It is a continuous process. I think once teachers get started on that process, they will improve their teaching.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-35</p>
<p>4:29) 07-NOV-2000 12:33 Rick Norwood (rnorwood)</p>	<p>Student share experiences and/or solutions</p>	<p>9s-20</p>

Narrative	Analysis Categories	Code Line Count
<p>I had an interesting experience recently, were assessment guided my teaching. On the first test, almost all of the questions were written out in words. On the second test, almost all of the questions involved mathematical symbols. Some students did great on the words, badly on the symbols. Other students were just the opposite, great on the symbols, badly on the words. Most students did well on one or the other. I had been on the verge of cutting back on teaching the same material in several different ways, because it is time consuming. But the results of those two tests convinced me to make the time.</p> <p>I strongly believe it is better to cover less material well than to try to cover more material and do it badly. This does NOT, of course, meaning going over and over the same thing to the point of boredom, but it does mean teaching the same thing in many different ways.</p>		
<p>4:30) 07-NOV-2000 13:19 Steve Crandall (scrandall)</p> <p>Hello!</p> <p>I use assessment to determine many instructional decisions:</p> <p>where to begin with a particular student, when to remediate another, how to extend or enrich material, etc. You take who is given to you at the start of the year, and move them as far along as you can. As the momentum of daily lessons builds, I sure don't want to stop that; and so, the informal and "quick-and-easy" assessments help me fine tune the directions to take to keep the ball rolling. High stakes tests shouldn't stop that momentum just to determine a momentary position of the students achievement. The Heisenburg Uncertainty Principle says you cannot know both the position and momentum of an electron at the same time; but, my students are much more precious to me than tiny charged particles. And once the students get momentum going on learning, I hate to have to stop that for any reason to determine their achievement positions.</p> <p>Yours, Steve</p>	<p>Student share experiences and/or solutions</p>	<p>9s-21</p>

Narrative	Analysis Categories	Code Line Count
<p>4:31) 07-NOV-2000 14:32 Brooke Bertholet (brooke)</p> <p>Hi Steve!</p> <p>I've enjoyed the points made by your postings here. To me, they are highly relevant.</p> <p>With regard to the relation between mathematical reading skills and and reading skills in general, you have brought up an excellent point. The two are intertwined so delicately. I am finding in my own classroom, the better mathematics facilitator I can be for the kids depends heavily on how well I am also a language arts teacher. (I am in a Fifth Grade, general, classroom). It has helped so much that NCTM and NCTE are joining their efforts in collaborative publications, expanding my own goals in a "rubric" (if you will) for the objectives I long for all of my students to reach. The one area, this year, which I myself would like to strengthen in my practice, is to forge a stronger link between language arts and mathematical communication. Any ideas which you have to offer would be valued.</p> <p>I, too, use assesement (i.e. your second posting) to make instructional decisions, in the exact same areas and approaches which you have mentioned. I too, do not want to lose the momentum. A "dip-stick" tells you a lot as to where you and the class should be headed. A friend of mind compares it to "tacking" a sail-boat through the wind in order to properly reach your destination....that a sail boat doesn't go "straight," ever, to where it is headed. I, like you, with your analogy to the Heisenburg Principle, would prefer that all the crew arrives safely, soundly, more advanced and mature in their own knowledge of mathematics, and happier, self-knowledgable, young people in general than when they started on the journey. Yet, the number of decisions which must be made along the way is staggering. There is also the issue of practical management, and the one of satisfying the various "stakes" in your classroom, which I would appreciate learning how you balance. "Cheers," Steve. Many thanks. Many thanks to this forum as well.</p>	<p>Evaluative Response</p>	<p>9e-42</p>

Narrative	Analysis Categories	Code Line Count
<p>4:32) 07-NOV-2000 15:29 Rick Norwood (rnorwood)</p> <p>There is a "factoid" circulating currently that today's students have a vocabulary only about half as large as students thirty years ago. That certainly jibes with my own experience, where students do not know the meaning of such words as "cower", "juxtapose", and "smelt". Worse, they do not know the difference between a term and a factor, or between a coefficient and an exponent. I spend a lot of time in every class on vocabulary. One way to build vocabulary is to have students read you the questions from the book that they want you to answer. Gently help them with the pronunciation.</p>	Divergent Response	9d-14
<p>4:33) 08-NOV-2000 16:35 Rick Norwood (rnorwood)</p> <p>It is awfully quiet around here today, so let me share with you the following.</p> <p>Threads A Fable by Rick Norwood</p> <p>A poor teacher gave each of his students a thread every day. He told them again and again how important it was that they keep each and every thread. He told them that after they had all the threads, then he would teach them what to do with them. But it was hard for the students to see how a single thread could be of any use or value. And the threads were hard to keep and easy to loose. Each time a student lost her thread, the teacher scolded her and punished her, but no matter how severely he punished them, at the end of the year most of the students had lost many of their threads and by the start of the next year only a few students still had most of the threads they had been given, and so the next teacher had to start all over again. The class never did get to the point where they could start doing anything useful or interesting.</p> <p>A wise teacher began by giving each student a single thread, but she told them that the next day they would do something wonderful with</p>	Student share experiences and/or solutions	9s-53

Narrative	Analysis Categories	Code Line Count
<p>the thread, and so the students kept their threads carefully, looking forward to what they would do the next day. When the next day came, the wise teacher gave them another thread, and showed them how to weave the two threads together, so that they became part of a whole. The color of the first thread seemed brighter in contrast with the new color of the second thread. Each day the wise teacher not only gave the students a new thread, she also showed them how to weave that thread into the threads they already had, and by the end of the year, they had woven a beautiful fabric, that would keep them warm in the winter. All of the students saw the beauty and usefulness of what they had made, and so they kept their fabrics carefully. The next year, they all had what they had woven the year before, and so their new teacher could show them how to add to what they had already done, instead of needing to start over from the beginning. The students kept the fabrics they had created from the threads the teacher had given them for as long as they lived, took pleasure in them and were proud of them, and passed them on to their children and grandchildren.</p>		
<p>4:34) 08-NOV-2000 16:57 Fred G. Harwood (fharwood)</p> <p>I too was wondering why nobody has responded to the challenge of 4:22&amp; 23? It only takes a few minutes to show the power of constructing new ideas for multiplying.</p> <p>Fable(d) Response to rich Rick : We have revamped our curriculum in BC and the Western provinces under what is called the Western Canadian Protocol (WCP) to align the 4 western provinces under a common curriculum framework. In it is a despiraling of curric so that less review is allotted each year and of course the programs are full. If we as teachers have not followed the course of this fable then our students will be struggling to find their threads from their navel lint. Have you ever studied a tapestry from the back? Have you tried to make sense of a tapestry from a close in perspective of one corner? We should be showing the whole first, and either it's historical value, it's usefulness and/or it's beauty first before</p>	<p>Student share experiences and/or solutions</p>	<p>9s-27</p>

Narrative	Analysis Categories	Code Line Count
<p>discussing how to make the different threads work. Long term retention is found in truly learned ideas that have been uncovered and not covered.</p> <p>Now get busy some of you and try 4.22 (&amp; the correction in 4.23).</p> <p>Thanks, Rick. Your fable is fabulous.</p>		
<p>4:35) 09-NOV-2000 22:53 Jeane Joyner (jjoyner)</p> <p>If we learn to use more frequently and effectively the strategies of feedforward and feedback, I suspect we will be helping to address the issues of vocabulary as well as reading in mathematics (and the seeing the whole tapestry). The comments about not stopping the momentum of the lesson remind me that conversations with individuals or small groups and classroom discussions do provide us valuable information about what students are thinking if we become good at asking probing questions.</p> <p>Back to my original thought - I think of feedforward as several things: (1) making clear the goals, (2) using language and examples to help students connect where we are headed with what they already know, and (3) in general cueing students in ways that are likely to help them make sense of what we are studying. Likewise, feedback to them related to their discussions and written responses is an important way to encourage students to take greater responsibility. From a personal standpoint when I am the learner, I like the specific comments that encourage me to hang on to certain ideas and point out important places where I need to clarify my understandings (or identify misunderstandings). I'm that student who says "give me a hint, but don't tell me the answer - let me figure it out." Perhaps we should try to preserve the 3-year-old curiosity and confidence we likely all had.</p>	<p>Designs pattern of learning experiences</p>	<p>3D.-32</p>
<p>4:36) 09-NOV-2000 23:59 Fred G. Harwood (fharwood)</p> <p>Wonderful points, Jeane. Now how do we persevere that curiosity that we honour and how</p>	<p>Initiated Comment</p>	<p>9i-14</p>

Narrative	Analysis Categories	Code Line Count
<p>do we assess those qualities of intelligence, confidence and valuing of mathematics when 'they know we only value what we evaluate.'</p> <p>Think about those moments when our students became mathematicians and we were not equipped to 'give them credit'. Or is Alfie Kohn confirmed that are we reducing motivation with external marks, stifling creativity and defeating our goals?</p> <p>What are people doing about assessing curiosity, intelligent behaviours, life-long learning of math and valuing of our subject?</p>		
<p>4:38) 10-NOV-2000 07:39 Jeane Joyner (jjoyner)</p> <p>Fred, I wonder if we should be spending our efforts to nurture and encourage more than evaluate. To mee the assessment of the classroom needs to have more of a "partnership" feel. That is, teacher and students working together to reach goals with the assessments helping us know how far along the path to the goals we are (as opposed to assigning a grade or value to a work in progress).</p> <p>I suspect there is more truth in Alfie's writing than we would like to admit...but the stifling is not from setting goals, but making judgments that feel final to the student when he or she should be getting feedback to help with the work.</p>	Personal Lecturing	5P-14
<p>4:39) 10-NOV-2000 09:42 Fred G. Harwood (fharwood)</p> <p>I didn't mean to give the impression that it is for marks. I want to create more means of reporting students' successes (and areas to strengthen) in those less tangible areas.</p> <p>Yesterday, I saw a student who had failed last year's Gr. 11 class but I said to him, "I showed your 'Truck' at my workshop at the conference in Victoria." He just lit up because that was the one unit he worked hard on, was motivated to get extra help because he was graphing His Truck. Now, will he associate the greater effort with success?</p>	Student share experiences and/or solutions	9s-52

Narrative	Analysis Categories	Code Line Count
<p>Students see me walking around the school showing off their projects to other teachers and students so they know I appreciate their creative efforts.</p> <p>As a long time coach, I know that classroom assessment is a personal process that involves us in getting to know each other better. They need to learn what is of value to me and I need to learn about how they learn and live to make informed decisions on how to better teach and learn with them.</p> <p>In one self-assessment model I have used, the quietest girl in the class responded with seven single-spaced pages of deep intrapersonal intelligence that she talked about her previous teacher and how he had made such an impact on her learning by his tough, yet fair approach, his high expectations for her and by the personal touches of "even noticed when I had new glasses". I would not have had any of this, shall we call it "intelligence", to make those nurturing and encouraging connections with her.</p> <p>I have worked my 'science of anecdotal' into 24 hours of work for the first two reporting periods of the year where each of my 200ish students get a personalized third to half a page of comments from me. I do this because I need some forums for informing the students (and parents) where they are and where I have observed their strengths/weaknesses to celebrate or improve on in the coming term. This is a draining process with some students being overheard as saying, "Mr. Harwood is the only one to write comments."</p> <p>I am looking for an increased repertoire of tools for nurturing/encouraging/celebrating growth in my meta-curricular areas as well as the almighty % that parents and students seem to think tells all.</p>		
<p>4:40) 10-NOV-2000 12:16 Luke Dowell (Idowell)</p> <p>Fred and others,</p> <p>I have appreciated all of your comments in the various sessions, they have given me a lot to</p>	<p>Student talking to student</p>	<p>9t-19</p>

Narrative	Analysis Categories	Code Line Count
<p>think about. Fred, I like what you said about writing personalized comments to all of your students. I have tried that on a smaller scale, and even that was difficult. One thing I am in the process of trying along those lines is using the internet. One option is to post a problem online and require students to email their thoughts back to me. I'm also thinking about seeing if a chatroom could be set up for students in my classes to talk to each other about specific problems or general homework questions. Some students are more willing to participate online than in class. There are a lot of bugs that I need to work out, but I hope to try some of these ideas in the spring. I teach at a community college, but I think this idea could still work at the high school level.</p>		
<p>4:41) 10-NOV-2000 14:14 Rick Norwood (rnrwood)</p> <p>I've enjoyed participating in this panel discussion.</p> <p>I would like to recommend Ask Dr. Math <a href="http://www.mathforum.com/dr.math/dr-math.html">http://www.mathforum.com/dr.math/dr-math.html</a> as a resource you and your students should all enjoy.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-6</p>
<p>4:42) 10-NOV-2000 14:37 Susan Doherty (squinnxx)</p> <p>Well, this conversation has been humming along!</p> <p>What about this question. How can professional development providers be educated about effective classroom assessment strategies?</p>	<p>Asks Factual Questions</p>	<p>4f-5</p>
<p>4:43) 10-NOV-2000 14:38 Meg Meyer (mmeyer)</p> <p>I think the most important thing staff developers can do is to encourage reflection and discussion about assessment. I have always found assessment to be the hardest part of teaching. I was never been satisfied with how I did it, but I often found it hard to discuss it with other teachers. I was often met with surprise from my colleagues that this was an issue for me. After all, they didn't have any problems with assessment so why did I. What I didn't realize,</p>	<p>Personal Lecturing</p>	<p>5P-19</p>

Narrative	Analysis Categories	Code Line Count
<p>because it wasn't talked about, was the fact that we were talking about different things. They were talking about grading (and a very narrow view of that too!) and I was talking about figuring out what my students knew, understood, believed and could do in mathematics. If I had had someone to encourage my reflection and facilitate discussion among my colleagues, we would have all grown.</p>		
<p>4:44) 10-NOV-2000 14:39 Michael Chappell (mchappell)</p> <p>I would add that those responsible for providing professional development for teachers should engage in continual learning about what might be effective classroom assessment strategies for their clientele. Providers may need to "practice what they preach" by staying abreast of ideas and research developments and sharing these ideas in a variety of professional development forums. It is essential that they use these strategies with both adult and student populations in order to provide concrete examples and cases of professional development growth among inservice and preservice teachers.</p>	Factual Lecturing	5f-14
<p>4:45) 10-NOV-2000 18:43 Fred G. Harwood (fharwood)</p> <p>What I have found is that we need some specific grade/curric specific tasks to discuss together. It was mentioned in several areas of the pro-D value in marking open-response questions together using a rubric. There were untold number of times where one teacher would come up with an idea for how a student arrived at a solution that wasn't so clearly articulated but was an alternative to how they were expected to solve it. These became wonderful teaching moments for the the mathematical reasoning, communicating and assessing.</p> <p>We've not really looked at specific tasks in this conference to develop this practice for ourselves. I'm a firm believer in grass-roots number theory. Show the patterns with numbers before going to algebra or other generalizations. The same is true for criterion-referencing, rubric scoring, alternative assessments etc. [Not that I haven't tried to generate some activities to</p>	Convergent Response	8c-35

Narrative	Analysis Categories	Code Line Count
<p>discuss, people??!?!] We need to practise together on a specific example to build a scaffold for some to understand what the generalizations we're talking about.</p> <p>I did one workshop on assessment and planning math lessons with some university grads and my anticipation guide revealed a tremendous bunch of traditionalist assessors! It starts here in the teacher preparation courses (modeled/practised so the participants have ownership)and in the trenches where we continue to share with each other. Pro-D trainors should have specific examples for active participation of the workshoppees in the various styles.</p>		
<p>4:46) 10-NOV-2000 22:54 Jeane Joyner (jjoyner)</p> <p>Staff development providers are like all of us....we must either have experiences or else we must be able to envision where we are headed. It is likely that we will learn best by trying out the strategies we are suggesting so that we experience the ideas that sound so good in theory and are so hard to put into practice. Don't you find that your students often teach you as much (though different) as you teach them?</p>	Asks Evaluative Questions	4e-9
<p>4:47) 11-NOV-2000 01:15 Remy Tze Yin Poon (remypoona)</p> <p>I think I know how the short cut for 4.22.  Let a = numeral in the ten's place of the first and second number  b = numeral in the one's place of the first number  c = numeral in the one's place of the second number  if <math>b + c = 10</math> then <math>ab \times ac = a \times (a + 1) + b \times c</math>  if <math>b + c &lt; 10</math> then <math>ab \times ac = a \times (a + 1) + b \times c - (10 - b - c) \times a</math>  if <math>b + c &gt; 10</math> then <math>ab \times ac = a \times (a + 1) + b \times c + (b + c - 10) \times a</math>  Note: make sure that the product corresponds to the correct place value  i.e. a tens <math>\times</math> a tens = aa hundreds  b ones <math>\times</math> c ones = bc ones</p>	Student share experiences and/or solutions	9s-18

Narrative	Analysis Categories	Code Line Count
<p>I hope you can understand what I am talking about.</p>		
<p>4:48) 11-NOV-2000 07:07 Brooke Bertholet (brooke)</p> <p>It has been through my own professional development that I've been constantly encouraged to go after the goal in my classroom to match what sounds so good in theory but is more difficult in practice (thanks Jeane). Everyone here is trying for the same thing. Often, I am simply told that I am an idealist in a profession of idealism, but reality is always another thing. I'm not discouraged by anyone from wrestling each day with the difficulties of my practice, so long as I account for the reality. Sometimes, it makes me (and hence my students) feel caught. It is, I believe, that caring relationship between us in class which bridges the gap most often. For example, I too (along with Fred and Luke) correspond with my students in their math journals everyday. If a day is skipped, they complain. The repertoire of tools asked for by Fred is a dream of mine as well. The difficulty seems to be with balancing them all in such a way where everyone is happy. Thanks very much for the discussion. Knowing that colleagues from various parts of the world are facing the same daily challenge is extremely beneficial.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-25</p>
<p>4:49) 11-NOV-2000 11:03 Fred G. Harwood (fharwood)</p> <p>Thanks for taking it on, Remy. Did you develop the shortcut for numbers first and then seek out the algebraic rationale? I would want my students to describe the pattern first. This activity can be done at intermediate, where they couldn't do the algebra, just as effectively as Gr. 11 where the algebraic proof would be the activity. How would you describe your pattern(s) (there is at least 2) in words? Could you please describe your emotions in working through the activity? Thanks.</p>	<p>Student talking to student</p>	<p>9t-11</p>
<p>4:50) 11-NOV-2000 13:13 Remy Tze Yin Poon (remypoon)</p> <p>Yes, I developed the shortcut for numbers first</p>	<p>Student talking to student</p>	<p>9t-61</p>

Narrative	Analysis Categories	Code Line Count
<p>and then seek out the algebraic rationale. As I multiply the two numbers together I see the pattern. <math>45 \times 45 = 2025</math> (<math>40 \times 50 = 2000</math>, <math>5 \times 5 = 25</math>) {actually, I did <math>5 \times 5</math> wrote down the product 25; and then I did <math>4 \times 5</math> wrote down the product 20 on the left of 25 to get the product of 2025}; <math>25 \times 25 = 625</math> (<math>20 \times 30 = 600</math>, <math>5 \times 5 = 25</math>); <math>65 \times 65 = 4,225</math> (<math>60 \times 70 = 4200</math>, <math>5 \times 5 = 25</math>)etc.</p> <p>The same pattern applies to the second set of numbers, as long as the ones digits add up to ten, I can use the same shortcut. When the ones place digits don't add up to ten, I compare the two products and see the pattern. If the sum of the ones digits is more than ten, then I need to add the difference times the digit in the tens place to the product I got from the shortcut. If the sum of the ones digits is less than ten, then I need to subtract the difference times the digit in the tens place to the shortcut product. e.g. <math>32 \times 37 = 1184</math>, if I use the shortcut, I have 1214, the difference between <math>2+7</math> and ten is negative one, negative one times 3 tens is negative thirty. When I compare the two products, the difference is also thirty {<math>1214 - 1184 = 30</math>}, so I know that when the sum of the ones place digits is less than ten, I need to subtract after I use the shortcut, i.e. <math>1214 - 30 = 1184</math>. <math>55 \times 57 = 3135</math>, if I use the shortcut, I have 3035, the difference between <math>5+7</math> and ten is two, two times 5 tens is one hundred, the difference between the two products is also one hundred {<math>3135 - 3035 = 100</math>}, so I know that when the sum of the ones place digits is more than ten, I need to add after I use the shortcut, i.e. <math>3035 + 100 = 3135</math>.</p> <p>My emotions in working through the activity is that I felt good when I saw the pattern, but I wished I didn't need to express my thinking or explain in words (exactly the same way my students feel). Getting the answer is usually easier, the theory of "keep trying even if it is wrong" helps me achieve my goal to solve the problem. To explain in words is hard, because I need to reorganize my thinking in order to present my work which must make sense to others. Our fourth graders need to take the Washington State test which is a challenge not only to students but to teachers too. I know how hard it is for me to explain my reasoning and my thinking, and I understand how my students feel. However, I do believe that it is an essential skill. Actually, I think my students are fortunate</p>		

Narrative	Analysis Categories	Code Line Count
<p>that they are starting to use this skill at their early age. If we can encourage our students to start expressing their mathematical thinking from kindergarten on, they would not have difficulties as I have now. Communication in mathematical thinking and reasoning should be embedded within their daily math activities, and it won't be anything extra i.e. it won't be a burden after all. 'Tips for Writing Solutions' from Math Forum is very helpful.</p>		
<p>4:51) 11-NOV-2000 14:57 Christinia Frazier (ghsfraz)</p> <p>Hi Michaele</p> <p>This is in response to your statement on how those who provide professional development for assessment. The topic of assessment strategies usually comes up when it is time to perform on one of those mandated test from either the district or the state. Our principal coming from a mathematics background has every hope of making things work but often does not see the real problem. Statements and worksheets are given to encourage us to try this or that but very little is done in follow through and looking into the individual teacher's classroom. Overall the department is operating under the idea that things are fine, and that we don't have time to make these things work. They generally are unwilling to make many changes. I don't know what to do except keep plugging away in my room and try things that seem to work. I recently gave an Algebra Test that I knew would generate some discussion. But it included things that the students were taught but presented them in a different way, other than the standard textbook format. Giving the students more time to work out this first experience, the results were still rather dismal. I am not too discouraged, but comments about what I am trying to do, get rather discouraging. What does one do about teacher apathy within a department?</p>	<p>Student talking to student</p>	<p>9t-29</p>
<p>4:52) 11-NOV-2000 15:44 Brooke Bertholet (brooke)</p> <p>Dear Fred and Remy: The interaction between the presentation and the solving of the algebraic</p>	<p>Student talking to student</p>	<p>9t-66</p>

Narrative	Analysis Categories	Code Line Count
<p>problem was fascinating and fruitful to a learner-teacher such as myself. I enjoyed it enormously. When there is an opportunity to present this to my students, I will with enthusiasm.</p> <p>Remy: You have made me wonder about the limits and/ or barriers children face for the communication of their thought processes in front of any mathematical problem. Your description of yourself, in terms of the emotional joy you had in solving the problem, the actual understanding of the problem you have, and the difficulties of presenting your findings either verbally or in writing reminds me of a student I currently have, as it also brings you to empathize with your own students. My student is able, so well, to solve anything presented to her in our curriculum, or in open-ended problem solving, or in spatial reasoning, but is so embarrassed to talk about her findings in front of others. She is also a bit reserved in answering rubric questions in her math journal, knowing I will read them and respond. Yet, as exactly as you point out, the reorganization of your thinking into words is not only of benefit to others in dialogue, but it is most important to you--the student--in gathering together the threads of your own understanding. (My student wants to be an architect. How important this is for her!) The skill, as you mention, is essential. It was always difficult for me, personally as a student too, and now as the facilitator of such communication before my students. Yet, in encouraging my kids in dialogue within a community of inquiry, they help me develop my own bravery so as to, in turn, be better able to further guide them. The process is fully interactive. When the kids see that they can guide my thinking as a member of the community, they feel ever more confident as well. The other day, we were exploring how information plotted on a bar-graph appears different when the intervals chosen along the vertical axis are made smaller or larger. The kids corrected me with regards to the numbers representing the intervals when they were to be chosen so as to make it appear that one brand of sneaker costs significantly less than another though that isn't so in terms of the factual data presented. They were understanding the use of statistics, and the</p>		

Narrative	Analysis Categories	Code Line Count
<p>critical perspective needed to interpret data faster than I could have ever provided to them through a formal lesson by giving their suggestions to me. When the kids know that I rely on them as much as they may rely on me, the conditions for the possibility of mathematical communication appear (I believe) more quickly. As for starting such a process of the exchange of ideas, an openness with regard to how ones own reasoning develops and takes flight, and ones general thinking at an early age....this is an idea as both an educator and a parent that I couldn't agree with more. Many thanks...many thanks.</p>		
<p>4:53) 11-NOV-2000 17:18 Craig Morgan (cmorgan)</p> <p>Our district has an objective to improve our elementary problem solving. I gave a workshop last week that I borrowed from an NJEA Convention workshop of a friend of mine.</p> <p>The workshop introduced a &lt;Word Problem Analysis Sheet&gt; to teachers in grades 3 to 6. The object is to get the individual students to analyze the problem without trying to solve it. Then after analyzing it, they get into groups and present their answers to the questions to the rest of the class. This promotes not only understanding, but written and oral communication. The form of my outline is below:</p>	<p>Student share experiences and/or solutions</p>	<p>9s-14</p>
<p>WORD PROBLEM ANALYSIS SHEET</p> <p>Introduction</p> <p>Objective: to show you a process to help students analyze problems using the Word Problem Analysis Sheet</p> <p>Use the process when presenting a &lt;group&gt; of problems (5 to 10) to your class. Randomly distribute one of the 5 to 10 problems to each student.( Student A -prob 1; Student B -prob 2; Student C - prob 3; Student D - prob 4; Student E - prob 5; Student F - prob 1; etc.</p> <p>Procedure Start off working individually and then in a group</p>	<p>Gives or asks for Resources</p>	<p>5R-72</p>

Narrative	Analysis Categories	Code Line Count
<p>Groups make a class presentation</p> <p>The questions on the sheet are numbered below. The comments underneath are just clarifiers.</p> <ol style="list-style-type: none"> <li>1. What is the question? Read problem over carefully. Write the down the question or questions to be answered.</li> <li>2. If there are special directions, write them: Anything that seems special or unusual Must put in written form</li> <li>3. Do you need to convert any units in this problem? If so, explain and convert in written form. Example: You need to change gallons to quarts and one gallon equals four quarts.</li> <li>4. Define any special math vocabulary words: Any word that has to do with math List the word and what it means</li> <li>5. List the numbers in the problem and tell what they represent. Must list all the numbers Must tell what they mean in written form</li> <li>6. What do you estimate that the answer will be? Do not work out the problem No pressure for this to be correct What would make sense? Write down an estimate and write how or why you arrived at that estimate</li> <li>7. What strategy or strategies will you use to solve this problem? Think carefully about what strategies or operations you might use Give written reasons why you chose those strategies or operations</li> </ol> <p>When that is done individually, you would group the students according to the problem they worked on individually, give them a transparency, and have them come up with a consensus to complete each of the answers to the questions on the sheet.</p>		

Narrative	Analysis Categories	Code Line Count
<p>Each member of the group then shares and the group then reaches a consensus to the answers for each question on the sheet.  Each group will then explain the analysis to class.  After that, the class is assigned all the problems to solve.  Use some form of discussion to share answers in a written form. A possible way is to use the form below:</p> <p style="padding-left: 40px;">A Plan to Solve and Respond to Open Ended Math Problems</p> <ol style="list-style-type: none"> <li>1. My problem is ...</li> <li>2. My plan is ...</li> <li>3. Solve it.</li> <li>4. Label my work.</li> <li>5. My answer is ...</li> </ol> <p>I hope this might contribute to the idea of starting early to improve students' communication skill.  Craig</p>		
<p>4:54) 11-NOV-2000 21:41 Fred G. Harwood (fharwood)</p> <p>Excellent work, Remy. Were there any questions that you generated while doing the activity? Any things that you are now wondering about?</p> <p>For others, Remy and Brooke have talked about students needing to be stretched in the areas of communication, how this is a life skill that will be crucial to their success. Can we encourage our students through the assessment process? How might we do this?</p> <p>For Christina question about apathetic teachers: I believe the most powerful tool we have is to display our students work. I believe all teachers have at their core (or permeating their entire being) the desire to make a difference and to impact upon students. Yes, it is beaten down in some teachers but the embers can be fanned to flame by seeing the exciting work of students dynamically learning and enjoying the process of learning mathematics. When they compare this with the worksheets or text work they are doing and when they see the excitement you have in</p>	<p>Student talking to student</p>	<p>9t-24</p>

Narrative	Analysis Categories	Code Line Count
teaching, they will get agitated. Pessimism, defeatism, apathy is no where near as much fun as learning with our students.		
<p>4:55) 11-NOV-2000 23:38 Remy Tze Yin Poon (remypoon)</p> <p>While I was doing the activity, I thought about how come the shortcut doesn't work if the ten's place digit of the two numbers are not the same. I also thought about whether I will get a two or a three if I am scoring my answer.(= Whenever I assess my students work, I look at it as another opportunity for me to reflect on the lesson. Another challenge to prove that my students can/will learn, even it means that I need to try again in another way. Have good, appropriate and encouraging questions through the assessment process is definitely helpful to guide students in developing their communication skill. Somehow I sense that you are doing it to me. Thank you! I seldom participate in sharing, but you asked me the right questions and kept me thinking.</p>	Student talking to student	9t-17
<p>4:56) 11-NOV-2000 23:46 Fred G. Harwood (fharwood)</p> <p>I appreciate your involvement, it was valuable for me to continue to develop those leading questions. Not that I wanted to do it TO YOU but with you. Thanks again.</p>	Student talking to student	9t-4
<p>4:57) 11-NOV-2000 23:51 Remy Tze Yin Poon (remypoon)</p> <p>Thanks! I have learned a lot from you and others from this conference.</p>	Student talking to student	9t-2
<p>4:58) 12-NOV-2000 07:56 Lana McDonald (lanad)</p> <p>Fellow 'conferencers, I am truly motivated. As a person who once worked on the professional development of teachers, and had(still has) a clear vision of where mathematics education in the elementary school should be; now that I am back in the classroom, I truly appreciate the dynamics between theory and practice.This is my second year back in the classroom. My goal</p>	Student share experiences and/or solutions	9s-50

Narrative	Analysis Categories	Code Line Count
<p>is to be in the classroom for at least three years to try the things I have been 'preaching' for thirteen years. Now, I have to grapple with all the issues surrounding and involving the teaching and learning of mathematics. And I can tell you , it's not easy. But, I believe the solution is there. My challenges and hopes have all been mentioned in the discussion.</p> <p>I am teaching Grade 5. I worked with the same class in Grade 4, and I teach all subjects. I am therefore a generalist. For this school year I plan to offer a curriculum with a core structure based on reading, writing, listening and speaking. All subject areas will feed into this core, including mathematics. In a nutshell, students will be engaged in a lot of hands-on activities to develop mathematical concepts and vocabulary. Reading materials will be provided for them to research on the historical development of mathematics. For example, the historical development of our decimal system, which was done. My vision is 'to shape the learning environment to encourage literate thinking'. It took some months for me to come up with this theme, and I think it embodies exactly what I want to do, and it will keep my focus. Shaping implies that nothing is static, but instruction is dependent on the needs of my students. It also means that I have to satisfy administrative needs, and the needs of the national curriculum. Classroom assessment is what has/will assist me in identifying needs and determining the direction of my teaching. It is the tool that will do the shaping. I plan to use portfolio assessment, not as a high-stake device, but as a device for communication. I see it as an integral part of the core structure.</p> <p>Thank You everyone, for this most fruitful discussion. It has validated my thoughts and beliefs (Nick 4:29);(Steve 4:30);(Brooke 4:31);(Fred 4:34,36);(Jeanne 4:35), and expanded my ideas.</p>		
<p>4:59) 14-NOV-2000 10:44 Rick Norwood (rnorwood)</p> <p>There is a line in the current film Red Planet you may enjoy. The astronauts have crashed on the planet Mars, and have to find their way to</p>	Convergent Response	8c-7

Narrative	Analysis Categories	Code Line Count
shelter. One of them says, "Remember in high school algebra when they told you that one day your life would depend on your ability to do algebra? Well, this is it."		
4:60 MISSING in the Web		
<p>4:61) 14-NOV-2000 23:47 Deb Burdick (dburdick)</p> <p>I appreciate Lana's comments and commend her on her decision to go back into the classroom and put theory into practice! I am currently fascilitating numerous professional development activities and training for secondary instructors in addition to teaching numerous math courses for Adult Voc-Ed students. It is amazing how quickly you can lose touch with what goes on in the classroom. It is easy to forget how busy teachers are and how "on" they have to be at all times. Most teachers start the day running and do not get to catch their breath until late afternoon. It is easy to forget what that pace is like.</p> <p>I have come up with a workshop schedule that I use so that I can tailor my professional development to the individual school/teachers that have requested my assistance. I do not want to waste any time - I need to know that the techniques that I am presenting to the teachers are able to be applied in their classroom. I also want to give teachers a "jump start" on integration so that improvement continues on beyond the workshop. This schedule also does not take the teacher out of their classroom.</p> <p>Thur: Arrive at Training Location and Spend time in the schools and classrooms with the teachers that you will working with. Every school and classroom is very different.</p> <p>Fri: Day: Spend time "tweaking" workshop agenda, lessons and activities to meet the individual needs of the teachers and school based on your observations on Thursday and spend more time in the schools. Also take time on Thur/Fri to meet with Building/District Level Administration. It is important to be clear concerning the level of support they are willing to provide for teachers</p>	<p>Student share experiences and/or solutions</p>	<p>9s-90</p>

Narrative	Analysis Categories	Code Line Count
<p>when they begin to integrate the new teaching strategies or resources that you will be presenting.</p> <p>Fri: After School- Kick off the training from about 4-6 pm on Friday night so you can get all the paperwork filled out, give an overview, do a more thorough needs assessment and discuss/tailor the Saturday Agenda.</p> <p>Sat: Full 6 hours of training for all. Lunch together if possible. Spend a little extra time at the end with teachers that you will team-teach with on Monday.</p> <p>Sun: Plan/finalize team teach lessons.</p> <p>Monday: Team teach in as many classrooms and with as many teachers as possible. This is a great opportunity for the classroom teachers to observe the new techniques they learned during the workshop on Saturday in action. It also gives them a break from preparing for as many classes since they spent most of their weekend in your training session. I usually facilitate the lesson and the classroom teacher assists as they are comfortable with.</p> <p>Additional Items: All workshops are for credit and teachers are given a stipends for attending the training when possible. All teachers have the opportunity to earn additional credits for continuing to participate in follow-up teleconferences, creation of a project that they deliver in thier class and posting to a listserv that you create for the group. Ideally you would also schedule follow-up on-site sessions, in addition to teleconferences.</p> <p>Nothing earth shattering here but I have to say that this schedule has been so effective that I refuse to conduct training any other way. It is amazing the differences that exist among classrooms. I think the more you can do to assist the teacher with the integration of the skills they learn during professional development into their classrooms the more likely changes are to occur. It also keeps you current with all the classroom dynamics and challenges and expands your capacity to assist educators. Yes-</p>		

Narrative	Analysis Categories	Code Line Count
<p>this takes more "time" - it is not a "one-shot" professional development approach but it has a much better chance of effecting real improvements in the classroom and gives the teacher some of the additional time and assistance they need to make improvements. I figure we are going to spend the money and more importantly, the time, so lets make it count!!!!</p>		
<p>4:62) 15-NOV-2000 13:34 Rick Norwood (rnorwood)</p> <p>I had a very good "partnership" experience in the class I just finished teaching. It is a college level class, but I think the same kind of experience could take place in any class.</p> <p>I have the students put problems on the blackboard before the beginning of class, for extra points. One student had a problem that had multiple parts, and he had only presented the first few parts. To gain some blackboard space, I had the other students go first, and when I had checked to make sure everyone understood, I erased part of the board and let the student with the long problem begin.</p> <p>I sat down and watched, and occasionally asked an open question, such as "What do you have to do next?"</p> <p>Soon, the whole class was helping the student with the problem, and talking in a very lively way. Occasionally they got off the subject (onto the election, for example) and I had to say "Focus, people." That comments from me along the lines of "Good!" and "Very good!" was all it took. At one point, they thought they had covered everything, and I had to say, "What still needs to be done?" The thing that still needed to be done was to check that in one algebra step, they had not divided by zero. That was all the help they needed. The problem was well and completely solved.</p> <p>I think the fact that I was sitting down, and didn't say much, helped them to own the problem, and make a real effort to solve it.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-32</p>

<b>Acknowledges Student Ideas</b>	<b>3a-12</b>
<b>Designs pattern of learning experiences</b>	<b>3D.-32</b>
<b>Asks Convergent Questions</b>	<b>4c-16</b>
<b>Asks Evaluative Questions</b>	<b>4e-9</b>
<b>Asks Factual Questions</b>	<b>4f-13</b>
<b>Factual Lecturing</b>	<b>5f-167</b>
<b>Orientation Lecturing</b>	<b>5O-44</b>
<b>Personal Lecturing</b>	<b>5P-63</b>
<b>Gives or asks for Resources</b>	<b>5R-72</b>
<b>Convergent Response</b>	<b>8c-107</b>
<b>Divergent Response</b>	<b>9d-43</b>
<b>Evaluative Response</b>	<b>9e-42</b>
<b>Initiated Comment</b>	<b>9i-40</b>
<b>Student share experiences and/or solutions</b>	<b>9s-530</b>
<b>Student talking to student</b>	<b>9t-261</b>

**Main House Home**

**Table # 76: Main House Home, Item 5, Classroom Assessment from the Inside**

<b>Narrative</b>	<b>Analysis Categories</b>	<b>Code Line Count</b>
<p>MW Panel 3: Classroom Assessment from the Inside Main House Item 5</p> <p>Mathweb 2000 Center, Main House, Item 5</p> <p>Item 5 17-OCT-2000 14:18 Susan Doherty (squinnxx)</p> <p>Panel 3: Classroom Assessment from the Inside: Teachers' Perspectives</p> <p>Join us as a panel of teachers exchange experiences, ideas, and samples of K-12 classroom assessment.</p>		
<p>5:1) 17-OCT-2000 14:27 Susan Doherty (squinnxx)</p> <p>The Panelists</p> <p>Ann Lawrence has been a middle school mathematics teacher for over twenty-five years. She is the author of articles and books focusing on topics from using calculators and computers to problem solving and algebraic thinking in the middle school classroom. Appropriate assessment has been one of the key components in each of these endeavors. Recently she was the director of PBS Mathline's Algebraic Thinking Mathematics Project.</p>	Orientation Lecturing	5O-27

Narrative	Analysis Categories	Code Line Count
<p>Susan Palma is an elementary classroom teacher and building math and science coordinator in Regional School District 15 in Connecticut. She has been involved in Performance Based Learning and Assessment in the area of mathematics for the last ten years. As one of the authors of A teacher's Guide to Performance Based Learning and Assessment she has presented workshops around the country including Tennessee, Maine and Alaska. She was also a panelist on the Anenberg/CPB TV Workshop "Math and Science Assessment. What's the Point?" She is also a 1999 Presidential Awardee for Excellence in Mathematics or Science Teaching from Connecticut.</p>		
<p>5:2) 12-NOV-2000 19:39 Susan Doherty (squinnxx)</p> <p>Hi Ann and Susan! Thanks for joining us for week 3 of Mathweb2000!</p> <p>Let's start with a question that we also started with in Panel 2.</p> <p>What is classroom assessment?</p>	<p>Asks Factual Questions</p>	<p>4f-3</p>
<p>5:3) 12-NOV-2000 19:39 Ann Lawrence (alawrence)</p> <p>Basically, classroom assessment has two main purposes. First, assessment should clarify for students the mathematical understandings and the quality of work expected by the teacher. Second, assessment should provide evidence from students about the mathematics they understand.</p> <p>Aligning the purposes of assessment with classroom practice is a challenge. When planning assessment, I try to think carefully about why I am using a particular task or technique to make sure the instrument or method is suitable for the purpose(s) I identify. Without this step, I feel that my classroom assessment would be much less effective.</p> <p>More and more I find myself expanding the purposes of classroom assessment. Trying to determine students' conceptual</p>	<p>Factual Lecturing</p>	<p>5f-27</p>

Narrative	Analysis Categories	Code Line Count
<p>understanding, their mastery of basic procedures, and their facility in problem solving are essential goals in any mathematics classroom. However, I contend that it is also important to determine student attitudes and beliefs—both about mathematics and about their own ability to do that mathematics. Therefore, I also target these factors for assessment in my classroom.</p>		
<p>5:4) 12-NOV-2000 19:40 Susan Palma (spalma)</p> <p>The purpose of classroom assessment is to monitor student progress and to improve student performance. Monitoring a students performance through the use of varied assessment types should not stand alone. It should go hand in hand with instruction to improve student performance. Assessment should also be embedded into the learning process in a classroom. Students should also be aware of assessment and have an ownership in their assessment through self-reflection and goal setting. Assessment should provide opportunity for high levels of accountability for the student.</p>	Factual Lecturing	5f-14
<p>5:5) 12-NOV-2000 19:41 Susan Doherty (squinnxx)</p> <p>So, how do you acheive this in YOUR classroom?</p>	Asks Factual Questions	4f-2
<p>5:6) 12-NOV-2000 19:41 Susan Palma (spalma)</p> <p>I acheive this in my classroom with a wide variety of assessment types. There are the regular tests which evaluate "Do you Know It?" as well as Perfomance Based Learning and Assessment tasks to assess "Can You Use It?". The performance tasks are embedded in instruction and not just a piece to assess some concept at the end. These tasks require the students to build on what they know and use the concepts in real world situations. Prior to the students beginning a task, I as the educator have carefully thought through the expectations and criteria necessary for a student to demonstrate their understanding of</p>	Personal Lecturing	5P-41

Narrative	Analysis Categories	Code Line Count
<p>the concept as well as the work habits, thinking skills, process skills, and craft skills necessary to complete the assessment task. These are communicated to the student through the use of a task and an assessment list. The role of the student is now clearly defined and the expectation for all students is high. We call this the "No questions, No Excuses?" because every item for the student to improve their performance has been laid out for them and they are now accountable for completing their assessment activities to this high standard. An example of this would be completing a bar graph of the Presidents' birthdays. The task and assessment list includes all the criteria needed for the students to complete a successful bar graph. These include axis labels, the title, the purpose of the graph, as well as what is included in a good summary statement about a graph. Through this method the students self-assess their work as well as self-reflect on areas needing improvement. Our students quickly move from needing the criteria given to them to making their own assessment lists because they understand what is needed for a quality mathematical work.</p>		
<p>5:7) 12-NOV-2000 19:42 Ann Lawrence (alawrence)</p> <p>I try to incorporate the following characteristics in the tasks and techniques I use:</p> <ul style="list-style-type: none"> <li>- provide a rich variety of mathematical topics and problem situations</li> <li>- give students opportunities to investigate mathematics using many different approaches</li> <li>- provide opportunities for students to give evidence of learning in a variety of ways</li> <li>- set high standards for the quality of work expected</li> <li>- incorporate both formal and informal methods by students, myself, and others</li> <li>- provide opportunities for students to express and examine their attitudes towards mathematics</li> <li>- structure activities in ways that realistically promote students' confidence in their ability to do meaningful mathematics</li> <li>- include diagnostic, ongoing, and endpoint</li> </ul>	<p>Personal Lecturing</p>	<p>5P-20</p>

Narrative	Analysis Categories	Code Line Count
measures		
<p>5:8) 12-NOV-2000 21:08 Fred G. Harwood (fharwood)</p> <p>Susan P., you mention "craft skills". Could you give an example or definition of these?</p>	Initiated Comment	9i-2
<p>5:9) 13-NOV-2000 23:21 Susan Palma (spalma)</p> <p>Fred Harwood,</p> <p>The craft skills necessary are those things needed to complete the physical act of the task. An example is you wouldn't have a student do quilting if they cannot do it. You also need to be careful that the writing, art work, or creations can be done by the students and that the time that they take is worth the investment and will help you assess content.</p>	Factual Lecturing	5f-8
<p>5:10) 14-NOV-2000 19:49 Beth Sukraw (bsukraw)</p> <p>I am a high school and junior high math teacher. I find that many times elementary teachers are way ahead of me on alternative assessments. I do many informal. This year I have structured the classes so that every week we complete a relevant project and story problem over the ideas we have studied. For the higher level math classes, we are having a blast and enjoying the projects, the 7-9 has so much trouble in their work habits. I have a wonderful instructor who gave me a book on cooperative learning through Kagan. I see cooperation and poor work habits as two of the challenges in alternative assessments, just because alternative assessments demand alternative activities.</p>	Initiated Comment	9i-16
<p>5:11) 15-NOV-2000 10:01 Ann Lawrence (alawrence)</p> <p>Beth-</p> <p>I totally agree that upper level students seem to "forget" how to work cooperatively. I always have to spend a lot of energy (and time!) in the beginning of the school year establishing the</p>	Personal Lecturing	5P-26

Narrative	Analysis Categories	Code Line Count
<p>atmosphere in my classroom as well as the "rules" for working together. But that time more than pays off as the year progresses and students do and learn math together comfortably.</p> <p>One other thing that has helped--for my junior high kids, on their first few projects, we do "intermediate deadlines" every couple of days where they know how much must be completed and I check in on their progress. This helps most of them learn to set such deadlines for themselves as the year progresses. Fairly quickly I wean them--giving only suggested intermediate deadlines and not actually checking. Unfortunately, there are always a few kids who have real trouble in this area, and I am convinced that one of the best things I can do for those few is continue to emphasize the importance of work ethic and habits--so I keep trying. Have any of you found other techniques that help with the "hard core" disorganized or time-impaired students???</p> <p>Ann</p>		
<p>5:12) 15-NOV-2000 11:47 Beth Sukraw (bsukraw)</p> <p>Ann, Thanks for the good ideas and input! Beth</p>	Convergent Response	8c-1
<p>5:13) 15-NOV-2000 14:38 Susan Doherty (squinnxx)</p> <p>Ann, what are some unique features of how you use assessment?</p>	Asks for Sharing of experiences	4s-2
<p>5:14) 15-NOV-2000 14:39 Ann Lawrence (alawrence)</p> <p>While there is nothing unique about my techniques of assessment, I probably incorporate one feature more than most mathematics teachers: I have my students do a lot of writing. Their very first assignment of the school year is always to set three to five goals for the first marking period of the year; at least one of the goals must be directly related to doing or learning mathematics. Each student gives me a copy and keeps a copy for herself or himself. At the end of the nine weeks, each</p>	Personal Lecturing  Gives or asks for Resources	5P-31  5R-182

Narrative	Analysis Categories	Code Line Count
<p>students writes an evaluation of progress towards those goals and sets goals for the next marking period (some of which may be the same as the original ones.) I started using this technique because I had found it helpful for myself and I thought it would help weaker students keep their focus in my middle school mathematics classes. Through the years I have been pleasantly surprised that almost every student ends the school year with positive comments about the value of this goal-setting as self-assessment. I incorporate writing in many other ways as well. Sometimes students make two lists at the beginning of a unit, (1)“What I know about ____” (the topic at hand) and (2)“Questions I have about ____.” In reviewing the unit, they repeat this assignment. Sometimes I have students explain a mathematical concept to a creature from another planet or to a younger sibling in writing.</p> <p>Percents for Zork</p> <p>Hi Zork! So, you're from the planet Zorkio? Ok! Well, let me tell you a little about some things on earth. Pizza, motorcycles, VCR's, and perhaps the most important thing, percents.</p> <p>You will find percents in banks, on sale signs in stores, and almost any other place that you can think of.</p> <p>What is that you say? What is percent?! Well, for your information, Zork, percent is the comparison of a number to 100.</p> <p>Discount (which means the amount taken off or subtracted) is the best place to find percents (especially a big one). You see, discounts save you money. The bigger the discount, the more money is taken off the list price (original price). The price after the discount has been taken off, is the net price or the sale price.</p> <p>You also will find percents in interest, Zork. Interest is money paid for the use of other money. To find the interest on an amount of money, you use the formula <math>\text{Interest} = \text{Principal} \times \text{rate} \times \text{time}</math>. You can have simple or compound interest.</p>		

Narrative	Analysis Categories	Code Line Count
<p>Commission also uses percent. Commission is the salesperson's earnings. To find commission, you use the formula percent of commission/100 = amt. of comm/income.</p> <p>Zork, you can (and must) use percents in installment buying. It is paying for something with small, equal payments. This requires many steps, but you use a down payment, a balance, and a lot of adding, subtracting, adding and dividing.</p> <p>Some other things that you use percent in are profit and costs, and compound interest (which is a real pain and takes forever).</p> <p>Well, Zork, that's about all I can tell you about percents. And remember, be prepared when you see % (percent)!</p> <p>Good Luck on Earth! Ralph</p> <p>Often students must write individual or group explanations of their thinking and problem-solving techniques. These explanations are an important part of almost every day in my classes.</p> <p>Students are asked to create and solve their own problems about a particular concept. They often work with a partner to make any needed revisions in those problems and then students work each other's problems for practice or as part of a quiz or test.</p> <p>&lt;<a href="http://rheingold2.caucus.com/~ra1/LIB/main_house/squinnxx/00050014/hair.jpg">http://rheingold2.caucus.com/~ra1/LIB/main_house/squinnxx/00050014/hair.jpg</a>&gt;</p> <p>I also include projects which require my students to make and defend choices, both orally and in writing. For example, students may be asked to design a dinosaur park using specific guidelines and present reasons why their plan should be accepted by the park planners.</p> <p>Sometimes my students write about mathematics in the context of another subject area—science, social studies, or literature. For example, while studying symmetry and transformations in quilt block designs, students</p>		

Narrative	Analysis Categories	Code Line Count
<p>researched and reported the history of a particular quilt block.</p> <p>Rising Star</p> <p>This quilt design could have been sewn by an African American woman during the time of slavery. When her people were trying to escape to the North, they would have to travel at night through dense forests far away from the road. In the morning they would have to hide in caves. Since they had to travel by night it would have been easy to get lost to start heading in the wrong direction. They used the North Star as their main navigational device. It is believed that the Rising Star design resembles the North Star that helped them escape to freedom.</p> <p>When examining the rate at which drugs dissipate in the human body, students evaluate what the outcomes of their investigation imply about the use of performance-enhancing drugs in sports.</p> <p>And, finally, sometimes my students write about their attitudes and beliefs about themselves and mathematics. I ask direct questions which require written answers such as, "What things do you like about studying mathematics? What things do you dislike?" I also give less direct prompts such as, "Write a 'Permit Me' poem about the personal quilt block you designed."</p> <p>Permit Me Poems</p> <p>This type of poem explains the author's feelings. Because of the simple format, Permit Me poems work very well for students explaining their original quilt block designs.</p> <p>Guidelines:  The first line should begin, "Permit me to tell you about . ." The blank is filled in with an appropriate word or phrase that tells the main theme or topic of the quilt block.  The next several lines (it may be best to set a minimum number) give details, examples, or explanations of the theme or topic.  The poem ends with a few lines that begin, But</p>		

Narrative	Analysis Categories	Code Line Count
<p>what I remember most about ." or, "But the most important thing about ." In this section, the author gives a summary, conclusion, or strong statement that serves as an ending for the poem.</p> <p>Sample Poem: Original Quilt Block</p> <p>insert image</p> <p>This design has two lines of reflection. This design has a 180 degree angle of rotation. Permit Me Poem</p> <p>Shining Stars</p> <p>Permit me to tell you about shining stars. They light up even the darkest sky when I see them in the night. They are like the sparkles in the ocean: they are always there Even though I wake up in the morning and the stars seem to be gone. But the shining stars I remember most Are the ones on the night I wept for my cousin who passed on Still I know she is up there, shining away among the stars of the night.</p> <p>Sometimes the assignment is even as open-ended as, "Write a poem or song that tells something about how you view mathematics."</p> <p>Algebra A song sung to the tune of "I heard it through the grapevine."</p> <p>I guess you wonder how I knew How to work problems that make you blue. Some kind of problem about <math>a^2 + b</math>. I got it right, and now you're mad at me. It took you by surprise, I could say, When I got a hundred yesterday.</p> <p>Chorus I learned it through the grapevine, How Algebra is very fine. Honey, I learned it through the grapevine, That's why it's not blowin' my mind. Honey, Honey, yeah.</p>		

Narrative	Analysis Categories	Code Line Count
<p>I know it must be hard for you, But I was flunking my first tests, too. But then I studied every day. Before I knew it, I had an A. I caught my parents of their guard, When they read my report card.</p> <p>Chorus</p> <p>You'll learn factoring and equations, too. And after a while, they'll be easy for you. Mrs. Friedman, and her raisin friends, They'll bring you from your failing trends. It will be no surprise when you say, "Hey yo! I got an A."</p> <p>Chorus</p> <p>So when they call you supernerd, Just tell them that you heard, That people who are smart make a lot of dough, And people who are dumb have nowhere to go. They will be surprised when they see, Only geeks make all D's.</p> <p>Chorus 3 times.</p> <p>I believe these more personal writing assignments give students ways to express and deal with some fears and misconceptions about mathematics as well as about their own strengths and weaknesses. I have seen such writing help students develop confidence—both in their ability to do mathematics and in themselves.</p>		
<p>5:15) 15-NOV-2000 14:49 Susan Doherty (squinnxx)</p> <p>Susan, how about you?</p>	<p>Asks for Sharing of experiences</p>	<p>4s-1</p>
<p>5:16) 15-NOV-2000 14:49 Susan Palma (spalma)</p> <p>I also included many opportunities for the students to use math in situations that they may encounter in the larger world. Through our Performance Based Learning and Assessment Model the tasks also have a</p>	<p>Personal Lecturing</p>	<p>5P-34</p>

Narrative	Analysis Categories	Code Line Count
<p>purpose, audience, and a role for the learner. These roles are varied and help the student take on the real life role. I have asorting task where the students work for a company that must sort all the manufacturers' coupons that are returned to stores. The students' must find seven different ways to sort the coupons for this company. This may not sound like a math task, however our state has now added sorting and classification to our state testing. This activity has allowed students the opportunity to develop their sorting skills and to develop their understanding of attributes that are used in sorting and classification. Writing is always a component of math assessments because a part of the real world is being able to communicate your results. My assessment of students math problem solving skills are divided into three categories. Do they understand the problem, can they solve the problem, and can they communicate the results. Math assessment is also very often embedded or integrated into science tasks. Students are asked to graph the growth of palnts, develop ways to divide up the worms from our worm bin so all students receive equivalent amounts, and to collect, organize and summarize data on the eating habits of students in a nutrition unit.</p>		
<p>5:17) 16-NOV-2000 17:11 Susan Doherty (squinnxx)</p> <p>How do you analyze assessments to improve instruction?</p>	Asks Factual Questions	4f-2
<p>5:18) 16-NOV-2000 17:12 Ann Lawrence (alawrence)</p> <p>A few things that work well for me include the following:</p> <p>For traditional quizzes and tests, I analyze individual and class errors. If I find many students missing a particular item, I often interview a few students informally to try to determine whether the problem/ question is unclear or what understanding is missing. If I find a pattern of errors for an individual student or a class, I try to ask questions of that student or class, again primarily to determine what</p>	Personal Lecturing	5P-2

Narrative	Analysis Categories	Code Line Count
<p>understanding is missing. In both cases, I try to improve instruction based on the information I acquire. Often I request peer explanations or try a completely different approach to the topic. Sometimes, I wait for a time while I talk with peers and do reading, then we re-visit the topic.</p> <p>When students put together a collections of their work for grading, I often allow them to choose the items they include. For example, I might ask them to select two homework assignments, one quiz, two POWs, one multi-day assignment, one writing assignment, and one other item for assessment at the end of the grading period. I ask the student to explain in writing why the items were chosen and evaluate his or her progress. As a part of the evaluation of those collections, I look carefully at the quality of the work and the student responses as a check for myself about whether I am communicating my expectations and whether my students exhibit mathematical understandings I have targeted. Then I try to improve my instruction based on that process.</p> <p>When students are working in groups I often use a short checklist to assess a few characteristics while they work. I use the information I gather as the basis for individual conferences about mathematical or cooperative learning issues. Also, I sometimes use the information to re-group my students.</p>		
<p>5:19) 16-NOV-2000 17:13 Susan Palma (spalma)</p> <p>I am in a unique situations here. Our Performance Based Learning and Assessment Model has been a lot of work up front, however as we look at these tasks that have been painstaking developed to improve student performance. Once we have developed a task to address the need of our students to improve we work backwards looking through our instruction to make sure it also meets those aspects of our students performance that needs improvement. We carefully look to make sure that we hae included our curriculum and content standards. That we are teaching students how to use the thinking skills that are</p>	<p>Personal Lecturing</p>	<p>5P-30</p>

Narrative	Analysis Categories	Code Line Count
<p>going to be required to complete a task. We must also plan our instruction to include experiences with the complexity and format of the assessment as well as sharing benchmark models of quality work in the type that will be required in the performance task. Instruction should also include any communication skills that the students will need to complete the assessment task. I also work on the work habits the students will need to complete the task. That is why we call our model Performance Based Learning and Assessment because the learning is also part of the process of assessment when I teach to improve the students performance on a type of assessment.</p>		
<p>5:20) 16-NOV-2000 17:14 Susan Doherty (squinnxx)</p> <p>What sources have you found that contain good assessment activities/tasks?</p>	<p>Asks for Sharing of experiences</p>	<p>4s-2</p>
<p>5:21) 16-NOV-2000 17:14 Susan Palma (spalma)</p> <p>I am in another unique position in that we, in our district, did not find anything that fit our model so we developed our own. We have developed an entire web site of tasks in all subject areas to use. We have also written a book ourselves which was published by ASCD called " A Teacher's Guide to Performance Based Learning and Assessment". I also do not want to reinvent the wheel if it has already been done. I have used many of the AIMS activities in my varied assessment activities, as well as the Puddle Questions Series by Creative Publications. Developing Number Sense is another good resource I have called upon as well as the Problem Solver Series and Math Land materials.</p>	<p>Gives or asks for Resources</p>	<p>5R-16</p>
<p>5:22) 16-NOV-2000 17:14 Ann Lawrence (alawrence)</p> <p>As a middle school teacher, I especially like the sources of assessment instruments/tasks listed below. A few examples are shown.</p> <p>1. Balanced Assessment for the Mathematics</p>	<p>Gives or asks for Resources</p>	<p>5R-96</p>

Narrative	Analysis Categories	Code Line Count
<p>Curriculum. Parsippany, NY: Dale Seymour Publications, Pearson Learning, 1999.</p> <p>-packages of assessments for elementary, middle, high, and advanced high school</p> <p>The aim of this assessment is to provide the opportunity for you to:  Analyze and reason about probability.  make and justify a decision  communicate mathematical reasoning  Problem: At the Palatine School's Fall Fest the "Charity for Children" Club is planning to run a money-raising booth. One of the members in the club proposed the following game:insert image</p> <p>Juanita, the chairperson of the festival, likes the idea of the game, but she wants to make sure it is a good money-maker. You, as co-chair, have been asked to prepare a report to the festival committee on this issue. Make sure your report includes your recommendation and clearly explains how you came to your conclusion.</p> <p>2. Bush, William and Leinwand, Steven, editors. Mathematics Assessment: A Practical Handbook for Grades 6-8. Reston, VA: NCTM, 2000.</p> <p>-collection of examples, reflections, explanations and tips</p> <p>3. Charles, Randall, Lester, Frank, and O'Daffer. How to Evaluate Progress in Problem Solving. Reston, VA: NCTM, 1987.</p> <p>-A to Z on this topic</p> <p>4. Driscoll, Mark. Fostering Algebraic Thinking. Portsmouth, NH: Heinemann, 1999.</p> <p>-Guide for teachers, grades 6-10</p> <p>The Candle Problem</p> <p>Two candles of equal length are lighted at the same time. One candle takes 9 hours to burn out, and the other takes 6 hours to burn out. After how much time will the slower-burning</p>		

Narrative	Analysis Categories	Code Line Count
<p>candle be exactly twice as long as the faster-burning one? Explain how you got your answer.</p> <p>5. Great Tasks and More. Golden, CO: NCSM, 1996.</p> <p>-camera-ready assessment sourcebook</p> <p>Science Fair</p> <p>Three middle schools are going to have a science fair. The science fair will be in an auditorium. The amount of space given to each school is based on number of students. Bret Harte Middle School has about 1,000 students, Malcolm X Middle School has about 600 students, and Kennedy Middle School has about 400 students.</p> <p>The rectangle below represents the auditorium. Divide the rectangle to show the amount of space each school should get based on number of students. Label each section BH for Bret Harte, MX for Malcolm X, or K for Kennedy.</p> <p>What fraction of the space should each school get based on number of students? Show your mathematical reasoning.</p> <p>School BH School MX School K</p> <p>If the schools share the cost of the science fair based on number of students, what percent of the cost should each school pay?</p> <p>School BH School MX School K</p> <p>If the cost of the science fair is \$300.00, how much should each school pay based on number of students? Justify your answers.</p> <p>School BH School MX School K</p> <p>6. Stenmark, Jean Kerr, editor. Mathematics</p>		

Narrative	Analysis Categories	Code Line Count
<p>Assessment: Myths, Models, Good Questions, and Practical Suggestions. Reston, VA: NCTM, 1991.</p> <p>-models and step-by-step instructions for K-12 assessment techniques</p> <p>7. Stenmark, Jean Kerr, editor. EQUALS staff and the Assessment Committee of the California Mathematics Council Campaign for Mathematics. Assessment Alternatives in Mathematics. Berkeley, CA: EQUALS and Regents, University of California, 1989.</p> <p>-overview of assessment techniques, including discussion and examples</p>		
<p>5:23) 16-NOV-2000 17:16 Susan Doherty (squinnxx)</p> <p>What about technology?</p>	Asks Evaluative Questions	4e-1
<p>5:24) 16-NOV-2000 17:16 Ann Lawrence (alawrence)</p> <p>First, I think videos offer several options as an assessment tool. Students, alone or in groups, can make a video to explain a mathematical concept or to present the results of an investigation. Teachers can film their classrooms for self-evaluation or to analyze with a colleague. When viewing the video, we might focus on a particular aspect of teaching, for example, questioning techniques. Also, interviewing students on video can provide invaluable information about students' mathematical understandings. You can search the PBS video database for examples at your grade level.</p> <p>Computers offer many opportunities for classroom assessment. The benefits of using word processing software are often overlooked. All of the tasks that involve writing are faster and easier for students and teachers when documents are produced on computers. Many of my students who are reluctant to write "by hand" will attempt an assignment when they have access to a computer. Also graphics can be incorporated into such documents from spreadsheets, other software packages, or</p>	<p>Personal Lecturing</p> <p>Gives or asks for Resources</p>	<p>5P-35</p> <p>5R-153</p>

Narrative	Analysis Categories	Code Line Count
<p>even the internet.</p> <p>Spreadsheets are a wonderful tool for exploring mathematical topics. My students have done simple spreadsheets to analyze how they use their time outside of school to analyzing how to make a profit in a hot dog stand. They have investigated problems about topics from the properties of odd and even numbers to problems about deer populations in national parks.</p> <p>Managing Moose</p> <p>When studying animal populations, it is useful to develop a mathematical model. Use the information below to create a model of population growth for the moose population in a wildlife preserve.</p> <p>Current Number Survival Rate Yearly Harvest  Adult M B 0.95 H  Adult F C 0.95 S  Calf M M 0.50 none  Calf F F 0.45 none</p> <p>Assume also that the reproductive rate per cow is 0.48 and 0.42 for male and female calves, respectively.</p> <p>Write equations that represent the number of each type of moose for the next year. Assume that at the start of the first year, the following are true:  B = 100  C = 80  M = 30  F = 30  H = 40  S = 20</p> <p>Make a spreadsheet to display the number of each type of moose and the total population size of the moose for several years.</p> <p>Problem: Assume you are a wildlife biologist with the job of stabilizing the moose population of Silver Stream Preserve to between 200 and 250 moose over the next 20 years. Use your spreadsheet to help you create a model that justifies the harvest rate you would suggest to the Wildlife Commission.</p>		

Narrative	Analysis Categories	Code Line Count
<p>Assessment is naturally built into spreadsheet activities (e.g., writing formulas to produce the desired displays) and they are easily employed to allow different levels of explorations within a group of students.</p> <p>Spreadsheets also allow students to explore problems for which the calculations are otherwise simply too unwieldy—problems which can help students understand concepts and develop problem-solving skills.</p> <p>Moving Populations Spreadsheet</p> <p>Problem: Suppose the population of two communities has remained stable for many years. Mountain Brook has maintained a population of approximately 20,000 and Bessemer approximately 35,000. Suddenly, 25% of Mountain Brook's population starts moving to Bessemer each year while the rest remain in Mountain Brook. At the same time 20% of Bessemer's population starts moving to Mountain Brook each year with the rest staying in Bessemer. Over the next twenty years, what will happen to the populations of Mountain Brook and Bessemer?</p> <p>Design a spreadsheet that will solve this problem. Print out your values and formulas.</p> <p>Experiment by changing the beginning populations. How are the results similar? How are they different?</p> <p>Experiment by changing the percents that move from one community to the other. How are the results similar? How are they different?</p> <p>Use your spreadsheet to find any generalizations you can make about a situation similar to the one in this problem. Write a paragraph about your explorations and conclusions.</p> <p>I believe the power of a spreadsheet to help students test and find rules and generalizations cannot be duplicated without technology. I also believe that all students deserve the opportunity to work with such tools. I fear that the lack of access to technology is increasing</p>		

Narrative	Analysis Categories	Code Line Count
<p>the gap between our economically privileged and deprived students. I use mathematics-related software programs in classroom assessment as well. Using The Geometer's Sketchpad software my students have created dynamic sketches to demonstrated their understanding of topics from kinds of triangles to fractals. They have also completed projects with symmetry (Link to Make Me Symmetric.) and other topics. (Link to Animated Frog). Students were quite engaged and I used a simple checklist as they made presentations to their classmates--an easy, effective assessment tool! The Geometer's Sketchpad can also be used to help assess problem solving. Students at my school made Power Point presentations to explain their solutions to problems from the NCTM journals' menu problems. They included sketches created using GSP in their Power Point presentations. (Link to Power Point Presentation.)</p> <p>Calculators are an integral part of my teaching and assessment as well. I am confident that my middle school students understand concepts and solve problems better now than before they used graphing calculators. One of the biggest advantages of access to calculators that I have seen for my students is the choices they now have to solve a problem with various representations. For some that means using a table, for others a graph or a statistical plot of some kind.</p> <p>Amusement Park</p> <p>Tracy and his friends are going to the amusement park and find that they have two options for buying tickets. With the first option, each person could buy an admission ticket for \$5.00 and then pay \$.25 for each ride. The other option is to buy an admission ticket for \$2.00 and then pay \$.75 for each ride. What do you think Tracy should do?</p> <p>Suppose that on Monday Tracy's grandmother gave him \$6.00 for the amusement park. Which option should he use? Why?</p> <p>Suppose that on Wednesday Tracy's uncle gave him \$10.00 for the amusement park.</p>		

Narrative	Analysis Categories	Code Line Count
<p>Which option should he use? Why?</p> <p>For me, seeing a new way to find a solution is exciting. Calculators often allow my students to have that same thrill as they find and share their own ways of thinking.</p> <p>Finally, the internet itself offers us almost unlimited opportunities for new assessment tasks/methods. The data for investigating so many real-world problems is literally at students' fingertips. Software like TI-InterActive allows user-friendly interaction among the calculator, the computer, the internet, and the investigator.</p> <p>Finally, I have found assessment tasks and instruments posted by other educators that have expanded my resources immensely. For me, technology has made classroom assessment easier, more exciting, and more effective. As they say, "Who could ask for anything more?"</p>		
<p>5:25) 16-NOV-2000 17:17 Susan Palma (spalma)</p> <p>As I stated in my previous question I am fortunate that our district has develop a web site that contains assessment tasks in all subject areas as well as curriculum resources, graphic organizers, content standards, and dimensions in learning to help develop our assessment tools. We have also made an effort that once a student has mastered a skill by hand that we should include in our assessment technolgy components. An example is once a student can create a quality bar graph the task then adds the element that they now must create a computer generated graph. We also make an effort to watch that our assessment use a variety of technolgy tools and software.</p>	Personal Lecturing	5P-15
<p>5:26) 17-NOV-2000 09:23 Ann Lawrence (alawrence)</p> <p>Susan-</p> <p>Is the technology component of your district's</p>	Gives or asks for Resources	5R-4

Narrative	Analysis Categories	Code Line Count
resources available online? If not, is there a way to request a copy of those materials? Thanks- Ann		
5:27) 17-NOV-2000 09:24 Ann Lawrence (alawrence)  Are there other great sources of tasks some of you participants can share? Thanks	Gives or asks for Resources	5R-3
5:28) 18-NOV-2000 09:53 Susan Palma (spalma)  Ann,  You can get information about our on-line resource by contacting Region 15 School District, Whittemore Rd. Middlebury, CT. There is also some information and addresses on <a href="http://www.region15.org">http://www.region15.org</a> Thanks for asking, sue	Gives or asks for Resources	5R-6
5:29) 22-NOV-2000 00:09 Susan Doherty (squinnxx)  Here's something that Ann Lawrence sent in, that didn't get posted during the conference... <a href="http://www.groupjazz.com/mathweb2000/frog/frog.htm">http://www.groupjazz.com/mathweb2000/frog/frog.htm</a>	Gives or asks for Resources	5R-4

<b>Asks Evaluative Questions</b>	<b>4e-1</b>
<b>Asks Factual Questions</b>	<b>4f-6</b>
<b>Asks for Sharing of experiences</b>	<b>4s-5</b>
<b>Factual Lecturing</b>	<b>5f-49</b>
<b>Gives or asks for Resources</b>	<b>5R-461</b>
<b>Initiated Comment</b>	<b>9i18</b>
<b>Orientation Lecturing</b>	<b>5O-27</b>
<b>Personal Lecturing</b>	<b>5P-301</b>
<b>Convergent Response</b>	<b>8c-1</b>

**Main House Home**

**Table # 77: Main House Home, Item 8, Alternative forms of Assessment**

Narrative	Analysis Categories	Code Line Count
<p>Main House Item 8 Mathweb 2000 Center, Main House, Item 8</p> <p>A Conversation with Gisele Glosser: Alternative forms of Assessment</p> <p>Item 8 12-NOV-2000 13:47 Susan Doherty (squinnxx)</p>		
<p>8:1) 12-NOV-2000 16:36 Gisele Glosser (gglosser)</p> <p>What forms of assessment do you use besides timed tests and quizzes? Let's discuss some ideas for other ways to assess your students' understanding of concepts taught. Alternative assessment is great for both mainstream and special needs students. And it doesn't necessarily mean more work for the teacher. I look forward to your questions and input! Gisele</p>	<p>Asks for sharing of experiences</p>	<p>4s-9</p>
<p>8:2) 13-NOV-2000 10:58 Craig Morgan (cmorgan)</p> <p>Gisele, Some forms I have used in my classroom are slateboards (by giving just a few problems at the beginning or end of class to look for previous learning or what is lacking), games (watch the student play a multiplication game with a partner to see their knowledge of facts), and written reflections on current or prior knowledge). Craig Morgan</p>	<p>Initiated comment</p>	<p>9i-8</p>
<p>8:3) 13-NOV-2000 13:03 Fred G. Harwood (fharwood)</p> <p>I use a self-assessment model based on Vygotsky's Zones of Proximal Development. Students brainstorm the concepts that they have worked on during the term under review. They then need to represent their learning of their ideas based on 3 levels and a trash can.</p> <p>Level 1: Actual learning means concepts they learned easily without any help</p> <p>Level 2: Proximal Development means</p>	<p>Student share experiences and/or solutions</p>	<p>9s-44</p>

Narrative	Analysis Categories	Code Line Count
<p>concepts they learned with some help from peers or teacher</p> <p>Level 3: Frustration means concepts they didn't learn even with help from peers/teachers</p> <p>Level 4: Trash means ideas they didn't even try to learn</p> <p>Students decide where each of the concepts fit on this structure and then have to create a representation (diagram, graph, mindmap etc.) that displays where their learning fit for each of the concepts. They then write a series of distinct goals for strengthening their weaknesses in the next plan. [Editor's note: I think I'll add into their writeup plans for making up incomplete ideas since the despiraling curriculum will continue to cause greater problems in their futures.] Their goals must be measureable.</p> <p>The project goes home to walk their parent(s) through the process of learning in the term and the parent(s) write a response and it is then returned to me.</p> <p>Students enjoy (variety foremost) being creative in how they'll structure something with 3 (or 4) levels and the fact that there is less writing needed than in a straight written assessment. [Students see the value of graphing for representation of ideas] I like the facts that students reflect and see ownership of their learning, it involves the home and I can hold them to their owned goals for improvement. "You said you'd try harder this term by doing all your homework, Billy. Are you going to finish this up tonight and show me tomorrow to keep your goal attainable?"</p>		
<p>8:4) 14-NOV-2000 11:06 Marcia Banks (marciabanks) I am interested in learning what other teachers do to assess student learning ! I teach maths (among other things) to 15 children, ages 6 - 9, who came in September not speaking a word of English or French. (They come from Finland, Russia, Japan, Spain, the Netherlands...). I use manipulatives, diagrams,</p>	<p>Student share experiences and/or solutions</p>	<p>9s-25</p>

Narrative	Analysis Categories	Code Line Count
<p>charts, and a lot of body language in my teaching. I also speak slowly. (The children have to deal with my American accent, the only one in the school!) Students show me their understandings through the use of manipulatives, (emphasis on manipulatives!) cards, their own drawings, games. There is some written work depending on individual abilities and readiness. I have the children work in small groups as I spend time with a given set of students. There is some large group work but that tends to be more quick drill items such as counting in twos in English, addition facts, etc... I give no formal tests but do keep portfolios of children's work in progress. Any ideas you have to offer would be greatly appreciated !</p>		
<p>8:5) 14-NOV-2000 11:51 Gisele Glosser (gglosser)            Craig, These sounds like some really good techniques. What grade level do you teach? Can you give a specific example of a slateboard? Thanks, Gisele</p>	<p>Acknowledges student ideas</p>	<p>3a-4</p>
<p>8:6) 14-NOV-2000 11:56 Gisele Glosser (gglosser)            Fred, This sounds elaborate, yet effective. "I like the facts that students reflect and see ownership of their learning..." I imagine that they must enjoy being actively involved in their own assessment. What grade level do you teach? What is the youngest grade that could participate in this type of assessment scheme? Thanks, Gisele</p>	<p>Summarizes student ideas</p>	<p>3s-8</p>
<p>8:7) 14-NOV-2000 11:58 Gisele Glosser (gglosser)            Marcia, It sounds like you have a challenging teaching assignment. Where are you located? I hope you will find valuable information from this conversation and from this conference. Gisele</p>	<p>Acknowledges student ideas</p>	<p>3a-5</p>
<p>8:8) 14-NOV-2000 14:59 Fred G. Harwood (fharwood)            I've worked from Gr. 8 to 11 Enriched. I've</p>	<p>Student share experiences</p>	<p>9s-12</p>

Narrative	Analysis Categories	Code Line Count
<p>noticed a lot of discussion of the zones of proximal development on the Teachers of Whole Language listserve (TAWL) which is primarily elementary in scope so I imagine that as soon as they have some rudimentary graphing concepts it would be workable with some language change "Zones of Proximal Development" wouldn't mean a lot to a Gr. 3. "Things you learned with help from friends and teachers" works a lot better. I'm not sure if the Trash 'should be taken out' or not.</p>	<p>and/or solutions</p>	
<p>8:9) 14-NOV-2000 18:57 Craig Morgan (cmorgan)  Gisele, I've taught grade 5 for many years and used these types of daily assessments even before we adopted the Everyday Math Program. The slates used to be chalkboards which I cut from a four by eight sheet of hard pressboard and painted with chalkboard paint. Now we have slates that we use dry erase markers on. A little odor but a lot less dust.  Craig Morgan</p>	<p>Student share experiences and/or solutions</p>	<p>9s-9</p>
<p>8:10) 15-NOV-2000 03:40 Christine Palmer (cmpalmer)  We often use what I call a "windows page", a sheet of paper folded length-wise and cross-wise, to create four "window panes." It's amazing how many things in mathematics can, in some fashion be divided into four sections. Last week, I asked my prealg students to explain the four operations with integers. Earlier in the year, I used it for all of my students to solve a problem using "the four-step plan" for problem-solving. Later in the year, we will use the same format, with poster-board or Power Point presentation (four parts) as an option, to demonstrate "four major learnings this year"...we call it the "Windows on My World Project", and it will take several weeks. Another long-term project, using the same "windows" configuration is the creation of a word-problem that can be solved using an equation (problem, solution, check, sentence answer). The "windows page" is a format that allows me to assess a more open-ended activity fairly quickly and easily, because of the "identical" format.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-25</p>

Narrative	Analysis Categories	Code Line Count
<p>8:11) 15-NOV-2000 17:12 Gisele Glosser (gglosser) Christine, This sounds like a great technique. It is usually more difficult to assess open-ended activities. I'll have to remember this one! Thanks for sharing. Gisele</p>	<p>Acknowledges student ideas</p>	<p>3a-4</p>
<p>8:12) 17-NOV-2000 10:37 Amy Puff (amypuff) I can relate to Marcia's alternative forms of assessment. I have used base 10 blocks extensively both for instructional and assessment purposes, especially for diagnostic intervention on a 1:1 basis. These manipulatives have helped in number representation, addition, subtraction, multiplication, and addition of fractions with unlike denominators. Expecting use of picture representations has been very informative, as well. My students have struggled to learn basic skills. The combination of 1:1 attention using manipulatives, modeling, on-going questions and teacher-student dialogue has helped me to help students. They, too, like to know where they are "off" in their own thinking and methodology. When the students find out, it is like they have been pulled out of a place of despair. Of course, alternative assessment in this format can take place in a very limited way for most teachers...</p>	<p>Student share experiences and/or solutions</p>	<p>9s-21</p>
<p>8:13) 17-NOV-2000 11:37 Marcia Banks (marciabanks) I am printing the info tonight and will read through...I hope I can get back on line tomorrow. (?)</p> <p>I teach in Geneva, Switzerland, at the International School of Geneva. I have just returned from Nice, France, where I attended Bambi Betts' course on ASSESSMENTS ! Thus, I am a little behind on this conference, but do feel that between both conferences I have gathered a wealth of information ! Now to put some of this into practice ! Thank you one and all for sharing your ideas ! Marcia</p>	<p>Student share experiences and/or solutions</p>	<p>9s-12</p>

Narrative	Analysis Categories	Code Line Count
<p>8:14) 17-NOV-2000 13:38 Carmen Fernandez de Tarrago (cfernandez) Christine Palmer: I teach Geometry at an international school with many ESL students. I've seen the "window's page" work wonders in language and math classes in elementary and middle school when doing vocabulary words. In one of the squares they write the new word, in the square next to it, they write a synonym, in the bottom left box they write an antonym and in the last box they draw a picture describing the word. "Windows of my world project" sounds much more challenging for my tenth graders. Could you explain it in detail for me? Thanks. Carmen</p>	Student talking to student	9t-13
<p>8:15) 17-NOV-2000 22:09 Christine Palmer (cmpalmer) Carmen, I have done "Windows on My World" in several different formats. One of them occurred for the first time in a year when my students were telling me that they had not learned anything new, and that they were "bored" (I know, that's always a problem, but that particular year was worse than usual). Our school was emphasizing long-term projects, and the NCTM was stressing the need for connections to real life. I assigned the "windows" as a long-term project. I set up "check-in" times (1.decide on the topics/ideas/algorithms, 2.rough draft window #1, 3.rough draft window #2, 4.rough draft window #3, 5.rough draft window #4, 6.final project), and told the students they had to identify four things they had "learned so far this year". They use index cards for their initial ideas, just like for a research project. In each window, they are to present, explain, demonstrate, or illustrate their knowledge about the chosen topic. The project allows for variety in levels of understanding, because some students choose specific basic algorithms, while others explain concepts, properties, or new avenues of thought. I stress that what is new to each student may not be new to others, and that doesn't matter. What matters is that you learned it this year, so it was "new to you". The end result that first year was that my students discovered that they had learned more than they realized they had. It</p>	Student talking to student	9t-133

Narrative	Analysis Categories	Code Line Count
<p>also gives me a clearer picture about what I have gotten across well, or not so well. Of course, as we meet individually to discuss the check-ins, we are able to clear up misunderstandings. Needless to say, the projects are quite impressive when posted for all to see.</p> <p>I also use the "windows" for an end-of-year "Problem Solving Project". Again, the idea was originally sparked by the NCTM emphases on problem-solving and connections to real life. I use this for both prealgebra and regular math classes. Each student is required to create a problem that can be solved using an equation. (Again, there are check-in points along the way...The first being a rough draft of the problem, with the equation the student thinks will solve it.) The math students may stick to simple problems (e.g. There were fifteen balloons in the kitchen for Marcy's birthday party. If Marcy's mother already took 6 balloons to the living room, how many are still in the kitchen?), but the prealgebra students may use more complex situations (I have a favorite poster, from the very first year, that I hang on the wall every year. It is a problem involving assigning numerical values to musical notes and solving a system of simultaneous equations...in three different ways...to find out what the given notes were. It was done by a sixth grader who was taking the seventh grade prealgebra course that year.) The second window contains the formal algebraic solution of the equation (must include definition of the variable, equation, step-by-step solution, "complete sentence" solution statement i.e. <math>x=4</math>, not just 4). The third window contains the formal algebraic check i.e. copy the original equation, substitute your solution, simplifying steps, final equation, conclusion(hopefully, true). In the fourth window, the student must state the solution to their problem as a complete sentence answer, using appropriate labels, etc. Again, the final projects display provides an impressive picture of the progress that even the "slowest" student has made in understanding how we can use equations to solve problems. The variety provides a means for the students to compare their skills with their classmates, but in a very non-threatening</p>		

Narrative	Analysis Categories	Code Line Count
<p>manner, since their score is derived purely from their success in connecting the four steps, not from the complexity of the original problem. (I do, however, sometimes redirect a student's thinking, either because I am concerned that the problem they started with will confuse them, or because I think the original problem is not sufficiently challenging for a particular student).</p> <p>I have also used this format for the students to choose a an academic goal (e.g. I want to be better able to understand the things we are doing in math, or I want to improve my grade). This time, I have the students draw a goal (type of goal is their choice, and if they feel "artistically challenged", they may use a picture cut out of a magazine, instead) in the center of the paper. Then, each window must contain a specific, supporting action that they will take in order to accomplish their goal (e.g. I will read the section in the textbook that relates to what we discuss in class each day, I will ask questions when I don't understand something, I will copy the examples that are done in class, I will come back for extra help, ninth period, at least once per cycle, I will write assignments in my assignment book, I will do my homework every day, I will remember to turn in my assignment when it is due, I will make corrections in class). They actually write each action on an arrow that is aimed toward the goal. (A big advantage of this project is that, with these posted in the classroom, I can draw the student's attention to his/her commitment any time behavior is not in line with goals).</p> <p>I score each window using a ten point rubric, and then score ten points for the overall presentation (this includes such things as creativity, neatness, attractive or colorful presentation, etc). The entire project, then, is worth 50 points.</p> <p>It would become even more challenging, if the students were required to justify each step of their solution and/or checking process, with the properties being used.</p> <p>Hopefully, I have provided enough detail. I hope you find the idea useful! Chris</p>		

Narrative	Analysis Categories	Code Line Count
8:17) 18-NOV-2000 17:35 Gisele Glosser (gglosser) Thanks everyone for posting such detailed and informative techniques. There is a lot to be learned here! Gisele	Praises or encourages	2-3

<b>Praises or encourages</b>	<b>2-3</b>
<b>Acknowledges student ideas</b>	<b>3a-13</b>
<b>Summarizes student ideas</b>	<b>3s-8</b>
<b>Asks for sharing of experiences</b>	<b>4s-9</b>
<b>Initiated comment</b>	<b>9i-8</b>
<b>Student share experiences and/or solutions</b>	<b>9s-148</b>
<b>Student talking to student</b>	<b>9t-146</b>

**Table # 78: Main House Home, Item 9, MW Survey Results**

Narrative	Analysis Categories	Code Line Count
MW Survey Results  Main House Item 9 Mathweb 2000 Center Main House, Item 9, Resp 11  Mathweb2000 Survey Results! Item 9 17-NOV-2000 09:32 Lisa Kimball (lisa)		
9:1) 17-NOV-2000 09:39 Lisa Kimball (lisa) What would contribute the most to increasing the quality of assessment?  Response Ratio More training for teachers 50% Academic research 13% More standardization at the national level 10% Increase local autonomy 7% Opportunities for teachers to share experience 67% Outreach to parents and other stakeholders 13% Other (please specify) 0%	Asks convergent questions	4c-7
9:2) 17-NOV-2000 09:45 Lisa Kimball (lisa) What do you think is the biggest challenge vis-	Asks convergent questions	4c-7

Narrative	Analysis Categories	Code Line Count
<p>a-vis assessment?</p> <p>Response Ratio</p> <p>Teachers lack skill 23%</p> <p>Parents lack understanding 3%</p> <p>Politicians put too much emphasis on assessment 17%</p> <p>Our systems don't put enough emphasis on assessment 3%</p> <p>Takes too much time away from instruction 13%</p> <p>Assessment methodology is outdated 23%</p> <p>Other (please specify) 17%</p> <p>What do you think is the biggest challenge vis-a-vis assessment?</p> <p>1. Assessments in my state are scheduled too early in the year</p> <p>2. Politicians put too much emphasis on testing (testing and assessment are not the same thing.)</p> <p>3. Assessments not matched to timing of curriculum</p> <p>4. Many assessments taken together give more information than taken alone, but some assessments are given too much consideration: politically, historically, by communities, and by individuals.</p> <p>5. Teachers do not have enough planning time</p>	<p>Asks for sharing of experiences</p>	<p>4s-15</p>
<p>9:3) 17-NOV-2000 09:53 Fred G. Harwood (fharwood)</p> <p>Lisa, you need to state how many repondees there were and an explanation of why the percentages don't add up to 100 to give this survey a little more verity. Sorry to add to your workload.</p>	<p>Factual response</p>	<p>8f-5</p>
<p>9:4) 17-NOV-2000 11:09 Lisa Kimball (lisa)</p> <p>What is the biggest challenge vis-a-vis assessment given your role?</p> <p>1. Explaining the difference between testing and assessment.</p>	<p>Asks for sharing of experiences</p>	<p>4s-139</p>

Narrative	Analysis Categories	Code Line Count
<p>2. Lack of skill.</p> <p>3. The biggest challenge for me is to remember that the "test" is not what I am aiming for. I am interested in my students having a deeper level of understanding, and I believe that will help them perform well on the test... but the test score is not my goal. With that in mind, I am also interested in my own personal assessments, done in my classroom. If I were given more opportunities to share experiences with other teachers in regard to assessment, that would strengthen my skills.</p> <p>4. Time - finding time to prepare properly in the planning process for evaluation, for the training of my students in the assessment process and their own role and the classes collective role, for the giving of proper feedback to students to improve their learning, for conferencing with students during the process and not just after the fact, for good quality accounting to parents, for strengthening our skills collaboratively with colleagues and to have more time for my other priorities in life - wife, family, friends, church &amp; sharpening my own saw etc.</p> <p>5. I am not sure what you mean by vis-a-vis assessment.</p> <p>6. Creating the common classroom assessments</p> <p>7. Being able to formulate an assessment tool which takes into full consideration how a student has learned to master a mathematical idea and skill as an independent rational thinker. Both process and content need to be reflected given the achievement of each individual student at whatever level.</p> <p>8. Politics</p> <p>9. That Continuous Assessment based on the narrow view of measuring performance at a particular point in time is used to evaluate students as success/failures. How to balance this administrative need with the learning needs of the students in my class, so that they all become the winners in this game.</p>		

Narrative	Analysis Categories	Code Line Count
<p>10. Encouraging more teachers to allow assessment to drive their instruction. What is the biggest challenge vis-a-vis assessment given your role?</p> <p>11. Planning - when assessment can be embedded in "placed-based" performance tasks, there is no disruption in curriculum delivery; but when required to interrupt instruction for mandated testing, simultaneous activities to minimize disruption while allowing time for the testing (and its preparations) are difficult to do.</p> <p>12. The biggest challenge is to make the test work for us. The results are often obscure and far too much is riding on their outcome. I don't mind some testing but it should be something we can use to further improve our teaching and the students understanding.</p> <p>13. The assessment given doesn't "match" what is being covered by the current curriculum. Therefore more time is taken away from actual instruction in order to "teach the test."</p> <p>14. My challenge is creating rubric for the assessment that are student friendly and usable.</p> <p>15. Training teachers to assess mathematics in a way that doesn't rely solely on correct answers</p> <p>16. Providing the training to teachers on the uses of various assessment forms for math.</p> <p>17. Our biggest challenge is assessing entering freshmen in college.</p> <p>18. When assessing my Grade One students, I must make sure that they can read the question prior to their answering it to make sure that the assessment is valid.</p> <p>19. There is a downward pressure coming from a decentralization of the system. More and more emphasis is being placed on administrative tasks rather than being centered on our students and what they need.</p>		

Narrative	Analysis Categories	Code Line Count
<p>20. Finding enough time in the day to teach, test, and do all of the paper work.</p> <p>What is the biggest challenge vis-a-vis assessment given your role?</p> <p>21. Finding different ways to integrate assessment into instructions.</p> <p>22. Teachers need to be educated in their subject area, as well as educated in the field of assessment. What type(s) of assessment tool(s) will you use, depending on the class size, course, topic, etc.?</p> <p>23. The biggest challenge is to develop strategies teachers can use in the classroom to make assessment and instruction one process instead of two separate.</p> <p>24. Teachers would like to use a balanced assessment approach, but they lack the training to implement it and the time to learn about it. We are under great pressure to prepare for standardized exams: It would be a crime to neglect these when students' futures are at stake. How do we balance these two needs?</p> <p>25. I have two main challenges as a classroom teacher. First is the time it takes away from covering other topics. Second is having good assessment material. The end of module assessments from the SIMMS curriculum that I use are good. I am talking about more end of semester, end of year assessments and practice assessments for statewide tests.</p> <p>26. A desire for high standards in conflict with the fact of unprepared students.</p> <p>27. To help teachers utilize diagnostic prescriptive approaches to help students understand/remember important mathematics concepts/skills.</p> <p>28. In my classes for future elementary school teachers, I have the freedom, and time, to use a wide variety of assessment tools - from projects to tests. However, in my college level</p>		

Narrative	Analysis Categories	Code Line Count
<p>algebra classes we have too much to cover in a short period of time - so explorations, etc are difficult to fit in - most of the assessment is based on skills and application problems. I do give take-home projects, but students don't spend as much time as they should on them. As many have said in this conference - our curriculum demands "too wide, not deep enough"</p> <p>29. Having the time to do it right!!!!</p> <p>30. lack of resources to help teachers change</p>		
<p>9:5) 17-NOV-2000 11:10 Lisa Kimball (lisa) Good point, Fred ... I'll see if i can extract that from the survey tool we use</p>	<p>Acknowledges student ideas</p>	<p>3a-2</p>
<p>9:6) 17-NOV-2000 11:18 Lisa Kimball (lisa) If you could change one thing about the way assessment is currently handled, what would it be?</p> <ol style="list-style-type: none"> <li>1. De-politicize it.</li> <li>2. I wish we didn't have to do letter grades for everything. Some students are slower than others.</li> <li>3. I would put the "test" at the end of the instructional year, so that instruction could be completed without the "rush"... and I would encourage other means of assessing student learning besides one test.</li> <li>4. Provide more pro-D opportunities for teachers to learn, share, collaboratively plan assessment up front etc. Pro-D days devoted to the assessment process - after all, we only believe the government values what they provide time for.</li> <li>5. Locally, I would share more with my colleagues. Statewide (in CA) I'd take it out of politics.</li> <li>6. I would eliminate inequitable, inefficient or inappropriate problems/scoring. Example 1: for the standardized testing that we have been</li> </ol>	<p>Asks for sharing of experiences</p>	<p>4s-120</p>

Narrative	Analysis Categories	Code Line Count
<p>using (It is an Iowa...perhaps the Iowa Performance Assessment...I don't recall the exact, correct title) the response to my inquiry was that my students would be penalized if they simply identified <math>10/25</math> as 40% (because they had memorized 19 common fractions and their decimal equivalents and, therefore would not need to estimate. Why on earth would the test item ask them to "estimate" the value of a fraction like <math>10/25</math>? If estimation is desired, then it would make sense to ask them to estimate <math>11/25</math>. For <math>11/25</math>, they could say that it is close to <math>10/25</math>, which is 40%, so <math>11/25</math> must be a little more than 40%. Second example: a problem like <math>2 \times (15 + 4) / 2 - 3</math>, when assessing understanding of the order of operations. Why not something like <math>15 - 4 / 2(2 + 3)</math>? That way, the assessment really can screen who understands P M D A S, differentiating those who mistakenly think the process is P M D A S.</p> <p>7. That the stake-holders of assessment are solely the students themselves. Teachers, administrators, and schools have a functional role in society for the welfare of the students, not the other way around.</p> <p>8. Take away standardisation of tests at school level.</p> <p>9. Make it a current, ongoing, daily part of the learning environment.</p> <p>10. Reduce the high stakes, encourage open-processes for student-parent-teacher-community input as informal process and not final judgement, absolute recognition that learning is a work in progress and not a product of some business.</p> <p>11. The often disconnect factor with the school and the curriculum. Make the test more relevant or just forget it. Some test try but ultimately they fail. I think that a more "standard" set of tests that work nationwide or are at least recognized on the national level as being "good", "fair", and "reasonable" is something to shoot for.</p> <p>12. better communication between those in the</p>		

Narrative	Analysis Categories	Code Line Count
<p>"trenches" (that is, teachers) and those who develop the assessment programs.</p> <p>13. I would make it valuable to the students. I would make sure they know why they are assessed!</p> <p>14. Eliminate the competitive nature of assessment among teachers, schools and school districts</p> <p>15. We would like for college placement exams to address integrated mathematics curriculums.</p> <p>16. Having more quality assessments and not more quantity assessments.</p> <p>17. I would allow for pre-assessment to take place whenever a student begins a course. What does that student need rather than "here is the curriculum, struggle with it?"</p> <p>18. At the university level, I wish that the public had enough faith in our expertise to accept a Degree and not make our students test and test. I feel that we have to put too much time into test prep.</p> <p>19. Don't just look at the score and stop right there.</p> <p>20. I think that within each school board, assessment should be standardized.</p> <p>21. I would make students responsible for the results of assessment. So far, only teachers have been held accountable for assessment and have been blamed for the results.</p> <p>22. I would train teachers how to implement and interpret asesment information. We keep thinking about the latter portion.</p> <p>23. In the state of Maine, I would try to make sure that whaat is tested only pertains to what students are expected to know by that time frame. (In Maine that is grade 4, 8 and 11.) The Maine Learning Results, which the test is based on, is a set of standards for students to attain upon graduation from high school.</p>		

Narrative	Analysis Categories	Code Line Count
<p>24. A focus on concepts, vocabulary, communication, and certain basic skills, instead of assessment instruments that are basically trivia contests.</p> <p>25. There should more input from those who are "really" knowledgeable about mathematics not just politicians that get into the "assessment whim".</p> <p>26. In K-12, particularly, I would like to see more projects, cooperative learning, investigation/exploration, etc.</p> <p>27. Treat teachers as partners and involve them in every step of the process - you need buy in to institute change. Teachers need additional planning time added to the day.</p> <p>28. more information sharing</p>		
<p>9:7) 17-NOV-2000 11:19 Lisa Kimball (lisa) Great input! Any other comments on the comments and results?</p>	<p>Acknowledges student ideas</p>	<p>3a-2</p>
<p>9:8) 17-NOV-2000 13:41 Marie Elizabeth Pink (pinkme) I can agree with almost all of the above. As a college math teacher I would like to have appropriate assessments which really indicate to me the past achievement of my students. Transcripts don't necessarily give me the entire picture. Incoming college student assessments don't always tell me as clearly as I would like, where the student in my class really is. For this reason, students are sometimes misplaced in courses and thus waste valuable time at the post high school level.</p>	<p>Convergent response</p>	<p>8c-11</p>
<p>9:9) 17-NOV-2000 16:58 Susan Doherty (squinnxx) And the winner is..</p> <p>Receiving a PBS video - XY Encounters: Lana McDonald in the Bahamas Brooke Bertholet in Spain</p> <p>Receiving a PBS video - Standards:</p>	<p>Praises or Encourages</p>	<p>2-8</p>

Narrative	Analysis Categories	Code Line Count
Remy Tze Yin Poon in Washington State Deb Burdick in Alaska  Thanks everyone for taking part in the survey!		
9:10) 17-NOV-2000 18:39 Remy Tze Yin Poon (remypoon) Wow, I won! Thank you!	Factual response	8f-1

**Acknowledges student ideas**

**3a-4**

**Asks convergent questions**

**4c-288**

**Convergent response**

**8c-19**

**Factual response**

**8f-6**

**Praises or Encourages**

**2-8**

**Workshops**

**Workshop 1**

**Table #79: Workshop 1 Item 1, School-wide Objectives**

Narrative	Analysis Categories	Code Line Count
<p>PBS MW WS1 School-wide objectives Sheila Vice</p>		
<p><b>Workshop 1 Item 1</b> Mathweb 2000 Center, Workshop 1, Item 1</p>		
<p>Item 1 11-SEP-2000 20:43 Susan Doherty (squinnxx)</p> <p>Workshop 1 is open, with my apologies to Sheila that her graphics are not included. Feel free to ask questions or add comments anywhere in the workshop area.</p> <p>We will explore what works when it comes to assessment, how to use the information learned from assessment to inform instruction, what instructional strategies are also assessment strategies, how to balance classroom assessment and school-wide assessment for state accountability, how to implement portfolio assessment, and more!</p> <p>Sheila Vice is Mathematics Team Leader and former Director of Mathematics Portfolios at the Kentucky Department of Education. Among her many responsibilities are the coordination of statewide K-12 mathematics professional development provided by the 8 regional centers, development of curriculum documents, implementation of the Teachers' Professional Growth Fund, and assisting in the design of the state assessment, the Kentucky Core Content Test.</p> <p>From 1992-1996, she was Co-Director of the Model Change Sites and Performance Assessment components of KentucState Systemic Initiative funded by NSF.</p>	<p>Orientation Lecturing</p>	<p>50-27</p>
<p>PBS MW Workshop 1 Schwde Obj Toby Sheppard Bloch (tsb), Organizer</p> <p>Mathweb 2000 Center , Workshop 1 # Title (click on column header to sort item list) New Last</p>		

Narrative	Analysis Categories	Code Line Count
1 Workshop 1: School-wide objectives		0
2 Introduction		9
3 Part I		28
4 Part II		6
5 Part III		6
6 Thank you		7

**Orientation Lecturing**

**50-27**

**Workshop 1**

**Table # 80: Workshop 1 Item 2, MW 2000 Center, Introduction**

Narrative	Analysis Categories	Code Line Count
<p><b>Workshop 1 Item 2</b> Mathweb 2000 Center, Workshop 1, Item 2 Introduction</p>		
<p>Item 2 31-OCT-2000 01:06 Susan Doherty (squinnxx)</p> <p>2:1) 31-OCT-2000 01:11 Sheila Vice (svice)</p> <p>"When I walk in my classroom and close the door, I can teach whatever and however I want to!"</p> <p>Think about it. For years, that statement typified the sentiment of the majority of teachers. We taught out of the textbook and tried to "cover" it by the end of the year, we tested with multiple-choice or true-false tests or standardized tests that were unrelated to the textbook, we knew some students weren't learning but we couldn't wait for them to catch up, and we rarely spoke with other teachers except at faculty meetings. We had never heard of the word "alignment," "performance assessment," "diverse populations," or "collaboration."</p> <p>Things have changed. Students have changed. Teachers can't do it alone anymore. In their schools, they must teach the same curriculum at the same grade level and know what the teachers before and after them are expected to teach. That means they need to assess what they have actually taught and make decisions about how they will reteach based on the results of the assessment. Novel idea, huh?</p> <p>...Apparently so, because we have spent recent years trying to redesign schools and teachers! We now realize that we need "standards" for all students, a curriculum that is "aligned" with assessment, and strategies for teaching "diverse learners." In fact, these characteristics are included among the many that educators generally agree must be present to have a "successful" or "high performing" school, such as:</p>	<p>Factual Lecturing</p>	<p>5f-64</p>

Narrative	Analysis Categories	Code Line Count
<p>Clearly articulated vision and focus on goals Standards of what all students should know and be able to do Alignment of curriculum, assessment, and instruction Parent and community support Professional growth opportunities for teachers and administrators Effective leadership Comprehensive and effective planning</p> <p>Higher student achievement is the result of teachers, administrators, parents, students, and the community working together. It may be expressed as higher test scores for the school, which is what policy-makers and district administrators would like to see, but may also result in fewer drop-outs, improvement in students' self-esteem, greater number of students taking higher mathematics courses, greater parent satisfaction, or more students attending college.</p> <p>We are going to examine a few of these areas which directly or indirectly relate to assessment and will provide you with some strategies that will help students learn mathematics better and some school initiatives which will result in higher achievement for all students over the long term. You may not have time now to engage in the activities themselves, but I will list the websites so that you can access them whenever you are ready.</p>		
<p>2:2) 03-NOV-2000 21:20 Beth Sukraw (bsukraw)</p> <p>Trust between all parties must be built.</p>	Initiated Comment	9i-1
<p>2:3) 05-NOV-2000 11:37 Christinia Frazier (ghsfraz)</p> <p>I agree that parents and community must be informed and brought into the process. I hope there are some real suggestions on how this can be effectively done. All too often the administrators say they want this and then fail to help organize or even support it.</p>	Convergent Response	8c-6
<p>2:4) 05-NOV-2000 18:31 Fred G. Harwood (fharwood)</p>	Convergent Response	8c-117

Narrative	Analysis Categories	Code Line Count
<p>Some real suggestions for involving parents and community:</p> <p>Classlevel: [If I want to change the world, I must first change myself.]</p> <p>I often assign homework as "take this idea home and teach a parent or relative what you have learned." Those then taught need to give some signed feedback as to how effective their 'teacher' was.</p> <p>Or, the assignment is to work out a pattern together with a parent/relative. (I have two superior methods for testing divisibility of 7 than the ones offered in most textbooks that were found by a parent child combination.) As much as possible, I want to communicate with the home my enthusiasm and the ways in which math education has changed from when they are in school. Not so they won't help but so they become a part of the constructivist process. I do this in my 10 minute speil at meet the teacher night, distributing my email, and my handouts on philosophy, criteria for teaching and for the curriculum/assessment.</p> <p>All my self-assessment models involve parental check and response of the student's goals in a paragraph (or more) on the back of their forms. (My favourite responses include, "Thanks for providing an opportunity to have an intelligent conversation with my teenager!" "My mom just corrected my spelling . . . alot." "My mom!, she wrote an entire letter!") (With home involvements come some responsibility too that wasn't always clear before. One reponse pointed clearly to emotional abuse that I had to follow up on. I don't know if the parent(s) wised up but I felt rewarded in knowing that I had made a difference with the child through the year as I looked into the progression of their self-assessments.) Utilizing self-assessments has really given opportunities for learning about the children more deeply.</p> <p>A very effective elementary example: one of my daughter's teachers sent home a newsletter of the class progress weekly. She had a feedback box on each one so I made a suggestion and it</p>		

Narrative	Analysis Categories	Code Line Count
<p>was acted upon the very next week. I really felt appreciated &amp; informed.</p> <p>Our district's Foundations initiative is based on Consistency, Clarity, Communication and Caring [C's the day!] This initiative was to make a district wide push to meet the broader needs for all students and not just the children of a "Traditional School" group of parents who were pushing to have a district one. We responded to make clear how all our school's were meeting the desires of this special interest group and to get us all talking about how we could do things better. The committee involved stakeholder groups, public forums, web publishing, print resources, target pilot schools and an ever expanding forum.</p> <p>A special impact has also been made by our district hiring a technology coordinator who created a wide-area network using FirstClass Client software that invited parent reps from each school to be a member. Information has really flowed. Our District Parent Association was formally recognized and involved throughout the district on ad-hoc committees and co-hosted many informational evenings, forums and networks in a collaborative climate. The Richmond District Parents' Association (RDPA) has been a voice for educating parents with monthly newsletters through every child in the district. The newsletters are also posted on the district's website. I was a member for 13 of the last 14 years and often found out information at their meetings well before it reached the school level. Parent ed was truly happening. Each school has a parent advisory body for interested parents that functions in a similar way for more than just fund-raising.</p> <p>As a working parent, I took initiative one day and offered an idea to my Gr. 4 daughter's teacher. I was transporting some borrowed TI-83's back to the Texas Instrument warehouse and offered to drop-in and teach them some introductory moves on these hand-held computers. We had a great hour together (the only one of my two daughter's 23 years of schooling during school hours). It was in the response that I was most intrigued with. The class sent me a thank you card made up of really 'good?' math puns. So I</p>		

Narrative	Analysis Categories	Code Line Count
<p>sent them a thank you for their thank you that was a series of order of operations questions whose answer on an inverted calculator spelt a word that fit into my thankyou. The moral was: even working parents can contribute through the mail, email, or some other format that enriches the students and educates the parents in response. At every parent night, our student-led conferences and open house evenings, I invite parents to contribute anything of interest or challenge from their lives - work, hobbies, home etc.</p> <p>These are some ideas below the 'change the state level' that I have found effective. All I've done at this level is work on some ministry committees, writing assessment items and adding my two cents to our listserv (which is actively monitored and contributed to by the ministry math rep) and to keep asking good assessment/evaluation suggestions to the test generators where I can. We all need to start somewhere.</p> <p>Comments and ideas from others in the conference?</p>		
<p>2:5) 05-NOV-2000 22:53 Steve Crandall (scrandall)</p> <p>Hello!</p> <p>At the National Middle School Association Conference in St. Louis this week, I presented with our 8th grade team science teacher Mr. Rob Hermann - the community activity is called "Astronomy Night". By making interdisciplinary ties, more applied mathematics occurred in both classrooms. Much of the "teaching" was done by the students themselves in cooperative learning activities and summary presentations to each other and to adults at the Astronomy Night Event. Astronomers from nearby clubs and universities brought their telescopes, and shared their insights with the greater school community. There is great assessment opportunity when students enjoy showing what they can do, and having the extra community eyes to observe this is awesome!!</p> <p>Yours, Steve</p>	<p>Student share experiences and/or solutions</p>	<p>9s-17</p>

Narrative	Analysis Categories	Code Line Count
<p>2:6) 06-NOV-2000 07:47 Andrea Miller (miller)</p> <p>Hi,</p> <p>We have had students write letters to their parents explaining what they know about a concept and what they felt they still needed to learn. Teachers also wrote a short letter to parents about the concept and asked parents to respond to their child's letter. We were surprised at the number of parents who responded. We are working to revise the teacher's letter to include a question parent's can easily respond to about the content so we will get more than praise for their son/daughter.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-11</p>
<p>2:7) 10-NOV-2000 13:06 Deb Burdick (dburdick)</p> <p>Greetings From Alaska-</p> <p>I think we can all agree that the "characteristics" Shelia outlines above do need to be present for exemplary teaching/learning to occur-BUT teachers need MORE of that 4-letter word - TIME . . . without additional planning time, reflection time, professional development time, evaluation time, time to contact parents and be involved with the community . . . significant improvements in "Education For All" students has little chance of occurring. Teachers may have one 50 minute planning period per day IF they are lucky. During this time they should be planning five - six hours or more of exemplary lessons that take into account multiple learning styles, a wide range of abilities, state and national standards, accountability, assessment, evaluation, fighting with photocopiers, and most importantly . . . how to motivate the students to learn and make these lessons meaningful to them. We are going to effectively do this in a 50 min planning period? I also would like to mention that many teachers do not even get a planning period? This is CRAZY!!!! Of course we do what all dedicated teachers do, work evenings &amp; weekends because we know how important our job is-but teachers can only keep up this pace for so long until they start to lose steam. More thoughtful planning and professional development time must be allocated per day per teachers if we</p>	<p>Convergent Response</p>	<p>8c-39</p>

Narrative	Analysis Categories	Code Line Count
<p>want to keep and recruit good teachers. A lot of Administrators worry that teachers will just "waste" this time or "go home early" - yes a very small percentage probably will BUT we can not always make policy based on what the poor teachers might do - if those in charge always worry about the few bad seeds the beautiful flowers that only need just a little extra TLC will wilt away from neglect. OKAY I am off my soap box for now :-)</p>		
<p>2:8) 14-NOV-2000 15:21 Rick Norwood (rnorwood)</p> <p>The biggest difference between schools in other countries and schools in the US is that in most developed countries and a lot of undeveloped countries, teachers always get time in every school day to plan, to meet with other teachers, to meet with parents and students, and to grade papers. While the teachers are doing this, workers who are not teachers are supervising the students in the cafeteria or playground or library.</p>	Convergent Response	8c-10
<p>2:9) 14-NOV-2000 20:03 Craig Morgan (cmorgan)</p> <p>Deb, 2:7 I agree with your assessment that TIME is the most important factor in improving our schools. Until that aspect can be straightened out, mass improvement cannot be effective. That said, we have choices.</p> <p>One could be to blow up the whole system (that wouldn't bother me!) as we now know it. Cut down the curriculum, get rid of grade levels, renew using a different structure for learning, build in time for teachers, stress the importance of learning and reflecting, not grades. That will take a while because our culture is used to what we have. Unfortunately, many teacher unions would be against this also because it is too much of a change, not because it is right or wrong. Change is scary.</p> <p>We could also, work a little at a time, in small groups, looking at how we as individuals teach, assess, and deal with our students. We can find creative ways to get administrators (who also</p>	Convergent Response	8c-38

Narrative	Analysis Categories	Code Line Count
<p>are aware of our problem) to steal time for us, to meet on our own, and reflect on our practices. It doesn't seem to be doing that much, and doesn't cover the myriad of problems we see, but when that change does come, the teachers who do the little things now will be in the forefront of the change and be able to give direction to those who will feel lost.</p> <p>Your earlier litany of difficulties will make many throw up their hands and say, I'm not doing anything. I prefer to say, let's do a little at a time, not become overwhelmed, and continue to make a difference with the students that WE have in our classes. Let's try some of these ideas. Let's prove the effectiveness of what we can do, in and with our classes. When that time for change comes, we'll be able to lead in the best direction.</p> <p>Craig Morgan</p>		

**Convergent Response**

**8c-210**

**Factual Lecturing**

**5f-64**

**Initiated Comment**

**9i-1**

**Student share experiences and/or solutions**

**9s-28**

**Workshop 1**

**Table # 81: Workshop 1 Item 3, Alignment of Curriculum, Assessment and Instruction**

Narrative	Analysis Categories	Code Line Count
<p><b>Workshop 1 Item 3</b> Mathweb 2000 Center, Workshop 1 , Item 3</p> <p>Part I Item 3 31-OCT-2000 01:25 Susan Doherty (squinnxx) I. Alignment of curriculum, assessment, and instruction</p>		
<p>3:1) 31-OCT-2000 01:29 Sheila Vice (svice)</p> <p>Aligning your curriculum, assessment, and instruction is essential for improving student achievement in mathematics. Your school should:</p> <p>develop and implement a mathematics curriculum that is rigorous, intentional, and aligned to state and local standards; use multiple assessment strategies to monitor and modify mathematics instruction to meet student needs and support proficient student work; engage all students by using effective, varied, and research-based practices to improve student performance; ensure that the designed mathematics curriculum is the one that is taught through effective instructional strategies and assessed through multiple assessment strategies.</p> <p>Developing a Standards-Based Unit of Study</p> <p>One strategy for aligning curriculum to standards and to instruction and assessment is developing a Standards-Based Unit of Study using a Unit Planning Map. See a development guide on the Kentucky Department of Education website. The file is in PDF format so you will need the free reader from Adobe Acrobat.</p> <p>The process is a several-days activity, it includes: addressing the Major Focus and Organizer of the unit, targeting Standards (you can substitute the names of your state/district/school's content and standards documents)</p>	<p>Factual Lecturing</p>	<p>5f-67</p>

Narrative	Analysis Categories	Code Line Count
<p>determining Essential Questions</p> <p>developing a Culminating Performance/Product and Scoring Guide</p> <p>outlining Enabling Knowledge/Skills/Processes and Instructional/Assessment Activities,</p> <p>and listing Resources</p> <p>This Unit of Study manual includes a section for each of those planning phases. There are work pages to guide school teams through the development of a unit, component-by-component. The key to this process is first to identify what students are to know and be able to do at the end of the unit. The next major step is to plan for the demonstration of student learning, and finally, for the delivery of instruction. You can use this process to develop any unit of study, regardless of grade level, content area, or level of integration.</p> <p>In developing a mathematics unit, it is assumed that state standards have been aligned with the National Council of Teachers of Mathematics (NCTM) Curriculum and Evaluation Standards for School Mathematics (1989), the NCTM Professional Standards for Teaching Mathematics (1991), and the NCTM Assessment Standards for School Mathematics (1995), and are or will soon be aligned with the newly released 2000NCTM Principles and Standards for School Mathematics. See the NCTM web sites for information on the updated standards: &lt; NCTM &gt; or &lt; <a href="http://www.illuminations.nctm.org">http://www.illuminations.nctm.org</a> &gt;. If your state standards have not been aligned with the former or updated Standards documents, do it at the school level. But plan to spend some intensive time and effort on the task. Your students are worth it!</p>		
<p>3:2) 31-OCT-2000 01:44 Sheila Vice (svice)</p> <p>Writing Effective Open-Response Assessment Items</p> <p>All teachers should participate in professional development on writing good open-response questions. It takes time and practice,</p>	Factual Lecturing	5f-22

Narrative	Analysis Categories	Code Line Count
<p>understanding of content, and efficient communication skills to write open-response items which elicit the demonstration of student learning that you want. You need to think about what content you are targeting, how you can make the question authentic, and how you can make the question accessible to all students while also allowing for high-level responses. One process for developing open-response questions is outlined in "Open-Response Questions in the Classroom," from the Kentucky Department of Education. The components include planning the question, writing the question, and developing a scoring guide. The page below is an excerpt from the document, which can be found at &lt; open response &gt;.</p>		
<p><b>(SEE GRAPHIC INSERT HERE) OPEN-RESPONSE QUESTION PLANNING GUIDE</b></p>		
<p>3:3) 31-OCT-2000 01:49 Sheila Vice (svice)</p> <p>Designing Open-Response Questions and Rubrics</p> <p>Here are downloadable pdf checklists for designing classroom open-response questions and rubrics developed by the Appalachian Rural Systemic Initiative (ARSI). For more useful activities and information, see their website</p> <p>Rubric Design Checklist</p> <p>This checklist identifies the components included in rubrics used in KIRIS or the Kentucky</p> <p>Core Content Test. Teachers developing rubrics for their own open-response or open-ended questions can use this checklist for evaluation. Teacher-designed rubrics should contain at least six of the seven criteria. The one exception may be #6, which has only been used on two of the test items in the mathematics subtest.</p> <ol style="list-style-type: none"> <li>1. ___ Graduated descriptors that identify components of the task are established for score levels 0 – 4.</li> <li>2. ___ Descriptors for higher score levels</li> </ol>	<p>Factual Lecturing</p> <p>Gives or asks for Resources</p>	<p>5f-39</p> <p>5R-39</p>

Narrative	Analysis Categories	Code Line Count
<p>reflect more complex processing\par and critical thinking than lower score levels.</p> <p>3. ___ Descriptors are unambiguous in identifying required student accomplishment(s).</p> <p>4. ___ Response requirements adhere to actual or perceived Bloom's Taxonomy verbs/actions.</p> <p>5. ___ Response requirements include process/strategy/application as well as solution/answer.</p> <p>6. ___ May consider assigning point values/ranges to various parts of the question.</p> <p>7. ___ Score of 1 is provided for a response relevant to the question/problem, but that illustrates minimal understanding.</p> <p>Developed for the Appalachian Rural Systemic Initiative (ARSI) by Dr. Ron Pelfrey, PEAC, Inc. and modified by Ken Rosenbaum, KR Consulting Inc.</p>		
<p><b>Task Design Checklist for OPEN-ENDED QUESTIONS</b></p> <p>This checklist identifies the components that Kentucky has included in each of the more recently developed Kentucky Core Content Test (KCCT). In order for students to have practice in responding to these type of questions, teachers need to develop open-ended questions for use in their own classrooms that closely parallel the state assessment. The checklist can be used by teachers to refine their questions to include all necessary components.</p> <p>1. ___ Clearly and behaviorially states actions the student must take and materials that may be used.</p> <p>2. ___ Based on 1 or more Core Content for Assessment indicators.</p> <p>3. ___ Concisely worded to include a focus statement and an interpretative task.</p> <p>4. ___ Provides for depth and breadth of</p>	Gives or asks for Resources	5R-38

Narrative	Analysis Categories	Code Line Count
<p>response by not asking for a specific number of responses.</p> <p>5. ____ Emphasizes processing that requires more than one step to complete.</p> <p>6. ____ Higher score levels reflect more complex processing and thinking skills (Bloom's Taxonomy) than lower levels.</p> <p>7. ____ Generates more than one correct response or allows for more than one approach or strategy.</p> <p>8. ____ Provides an opportunity for students to communicate in more than one way, e.g., tables, charts, graphs, timelines, etc. (when appropriate).</p> <p>9. ____ Allows for a quality response (one page) in 10 – 20 minutes.</p> <p>Developed for the Appalachian Rural Systemic Initiative (ARSI)par by Dr. Ron Pelfrey, PEAC, Inc. and modified by Ken Rosenbaum, KR Consulting Inc.</p>		
<p>3:4) 31-OCT-2000 01:54 Sheila Vice (svice)</p> <p>Diverse Learners: Strategies Teachers Use</p> <p>This list was gathered from teachers around Kentucky during statewide mathematics trainings as suggestions for making learning accessible to ALL students. Thanks to all teachers that shared these items during the workshops.</p> <ol style="list-style-type: none"> <li>1.Use prior knowledge to build on (KWL)</li> <li>2.Scaffold instruction (start easy &amp; build)</li> <li>3.Demonstrate understanding with visual summaries</li> <li>4.Have students buddy-up during work time</li> <li>5.Write directions as you speak them</li> <li>6.Allow different finishing times</li> <li>7.Use many graphic organizers</li> <li>8.Play music/ use songs</li> <li>9.Make real-world connections</li> <li>10.Use resources other than textbook</li> <li>11.Color code</li> <li>12.Use visual prompts</li> </ol>	Gives or asks for Resources	5R-46

Narrative	Analysis Categories	Code Line Count
<p>13. Use an outdoor classroom  14. Copy lesson notes ahead of time  15. Have Fun, Be There, Play, Choose Your Attitude  16. Interview and retell  17. Role play  18. Use wait time  19. Use a range of difficult materials  20. Rephrase questions  21. Vary questioning techniques  22. Use drama  23. Use learning centers  24. Use technology  25. Use student presentations  26. Proximity/preferential seating  27. Make hard copies of overhead materials  28. Use pneumatic devices  29. Give chance to redo work  30. Use a scribe  31. Convey the purpose for what you are teaching  32. Mark correct answers instead of incorrect  33. Enlarge text  34. Use collaborative special education teacher  35. Make assignments at different levels and styles  36. Use discovery in learning and teaching  37. Use algebra mats  38. Do a physical walk through the steps  39. Use multiple instructions  40. Address right- and left-brained learners  41. Model what you want  42. Make up silly limericks for kids to learn  43. Color acsmene overlays for work (helps some kids stay focused)  44. EXPECT THE BEST!</p>		
3:5 is missing from the Web site (checked 1/9/01)		
3:6) 01-NOV-2000 19:09 Fred G. Harwood (fharwood)		
<p>3:7) 06-NOV-2000 14:34 Sheila Vice (svice)</p> <p>Fred, combined responses from Amy Herman, Vonda Stamm, and Janice Eaves say that: Algebra mats are usually just large pieces of colored paper or foam used for algebra tiles. Students put the tiles that they are using for a particular problem on the mat and the rest of the tiles on the desk. Then they can focus on the</p>	Factual Lecturing	5f-20

Narrative	Analysis Categories	Code Line Count
<p>actual problem and answer because the rest of the tiles are out of the way. There is a special mat for algeblocks that has areas drawn for positive and negative numbers. The mat may be laminated, and there can be different ones for adding/subtracting integers, for multiplying/factoring polynomials, or for solving equations. You use algebra tiles to model an equation, using the two sections of the mat to represent the two sides of the equation. Then as you manipulate the tiles to solve the equation you can physically see the two sides of the equation.</p>		
<p>3:8) 06-NOV-2000 19:29 Fred G. Harwood (fharwood)</p> <p>Thanks!</p> <p>I wonder if a lip could be added before laminating around the outside to help the slide-off-table factor, two colours left side/right side with an equals sign in the middle would be interesting as well on one side. Or maybe the larger placemats could have lips surrounding two holding areas for the extra tiles.</p> <p>I like the concept. Much improved from the first year I built my own tiles from construction paper with my preschool daughters colouring one side for the 'positives'.</p>	Convergent Response	8c-11
<p>3:9) 09-NOV-2000 09:14 Rick Norwood (rnorwood)</p> <p>It might be interesting to have algebra tiles with the positive number on one side and its opposite on the other side. The students could be taught the rule, when you move a tile across an equal sign, turn it over.</p>	Student talking to student	9t-5
<p>3:10) 09-NOV-2000 11:06 Fred G. Harwood (fharwood)</p> <p>As opposed to removal/adding to both sides? It seems more formulaic than intuitive.</p> <p>I like my tiles with opposite sides being opposites because I can keep more of each handy that way. It's a pain to be sifting for one more negative '1' in my bag of overhead tiles.</p>	Student talking to student	9t-6

Narrative	Analysis Categories	Code Line Count
<p>3:11) 09-NOV-2000 15:33 Rick Norwood (rnrwood)</p> <p>Fred,</p> <p>Your comment on formulaic vs. intuitive brings up an interesting point we have not discussed so far.</p> <p>Let me begin with a story. We had an inservice for teachers here at ETSU and one of the short courses I taught was an algebra methods course. I stressed the importance of transposing, because many of my students come to college without ever having heard of transposing. A teacher came up after class and announced that she did not teach transposing, because she wanted students to understand about adding the same thing to both sides of the equation.</p> <p>For beginning students, she is right. But for advanced students, I still think I am right. Transposing is what professionals do. I think I am safe in saying that everyone who uses mathematics professionally understands that transposing is "really" adding a term to both sides, just as everyone who uses mathematics professionally understands that to multiply 23 by 31 you multiply <math>(2 \times 10 + 3)(3 \times 10 + 1) = 6 \times 100 + 2 \times 10 + 9 \times 10 + 3</math>. But you wouldn't want professional engineers doing their multiplication that way. They use a quicker algorithm (when a calculator isn't handy). In algebra, transposing is the quicker algorithm, and after students learn how to add to both sides of an equation, and after they understand why transposing works, they should start transposing without thinking. In other words, you need to save the forebrain for the parts of the problem that are new, and let the hindbrain take care of the parts of the problem that are familiar, or you'll never solve the problem.</p>	<p>Student talking to student</p>	<p>9t-35</p>
<p>3:12) 09-NOV-2000 16:10 Steve Crandall (scrandall)</p> <p>Hello!</p> <p>If an open-ended response type problem is</p>	<p>Student talking to student</p>	<p>9t-17</p>

Narrative	Analysis Categories	Code Line Count
<p>coupled with an additional explanation of the process used to find the answer, then there should be evidence to assess the students understanding whether the formulaic or intuitive is used.</p> <p>If a student wants to use a shortcut, then I want to have it explained what is being shortened. Fire that tutor who says the shortcut is better, and discuss with your colleagues how to promote understanding the proof processes while encouraging study of sharp and quick shortcuts.</p> <p>The individual students' carrying capacity is an important consideration; but the load is lightened when the work is "place-based" and the assessment is embedded in the processes.</p> <p>Yours, Steve</p>		
<p>3:13) 09-NOV-2000 16:50 Fred G. Harwood (fharwood)</p> <p>I agree, Rick and transpose with my upper classes but I wouldn't demonstrate it with manipulatives. I would use the manipulatives as a patterned demonstration for transposition showing how this 'shortcut' works as Steve has mentioned, not with flipping-my-chips-across-the-equals formula.</p> <p>PS. Have you tried the Main House 4:22,23 exercise?</p>	Student talking to student	9t-9
<p>3:14) 10-NOV-2000 10:10 Rick Norwood (rnorwood)</p> <p>I'm the tutor who says short cuts are better. After the students have mastered the basics, of course, and understand why the short cut works. There comes a time to move on.</p> <p>One of my bete noirs is Descartes' Law of Signs, which we teach our algebra students entirely by rote, without so much as a hint of why it works. Worse news: in all the time I've been teaching it, not one student has asked why it works.</p>	Student talking to student	9t-9
<p>3:15) 10-NOV-2000 11:20 Wilhelmina "Billie" Mazza (billiemscd)</p>	Student talking to student	9t-11

Narrative	Analysis Categories	Code Line Count
<p>Re the Harwood/Norwood discussion: Your points are both valid in my view. What if we rather than "Showing" or "Demonstrating" shortcuts have students DISCOVER shortcuts?</p> <p>Rick's comment about students not asking why sometime works - I firmly believe we (not with malicious intent) have TRAINED out students not to ask how something works or why - rather most of our students (by 2nd or 3rd grade) are in the mode, "Tell me what to do and I'll do it, but don't bother me with why or how!"</p>		
<p>3:16) 10-NOV-2000 19:20 Fred G. Harwood (fharwood)</p> <p>That is why highlighted on my wall are Costa's Intelligent Behaviours with "Asking questions or Problem Posing" being pushed for the kids to get going. I tell them the story of a Gr. 12 coming into my room for help at lunch when I hadn't taught Ma 12 for 18 years. I asked her, "Where are you having difficulties?" During the next 20 minutes she explained why she didn't understand the logs they were working on and at the end of lunch she said, "Thanks for all the help!" I hadn't said another word but listened to her articulate where she wasn't making the connections and she taught herself! And we did it for two days in a row! Two questions and I got, "you give great help!"</p> <p>Billie, you're right on when you ask for them to discover the ideas 'cause then they'll look for them when we're not around.</p> <p>I created some 'neat' MC questions for our Gr. 8 science finals. One question had 4 pictures of alien creatures I said were monoclops, 4 pictures of alien creatures that I said were not monoclops and then five choices of pictures to select the one that was a monoclop. Two of the science teachers looked at the question and said, "I haven't taught monoclops, I can't do it!" and left to prepare their 225 MC questions for their 1 hour exam (which the students finished early). The secretary looked at the problem and correctly said, "I think it's this one", the home-ec teacher said, "yes, you're right because these all have one tail and these don't", my wife could do</p>	<p>Student talking to student</p>	<p>9t-40</p>

Narrative	Analysis Categories	Code Line Count
<p>it, my youngest daughter etc. Yes, WE train (scratch that word), we CONDITION our students not to. Train has a positive connotation.</p> <p>Now I'm really whining: the activity in Main House Item 4 #22,23 is just such an example of discovery. Could some explore this so we can discuss how assessment could be embedded in it to enrich the learning.</p>		
<p>3:17) 11-NOV-2000 14:00 Steve Crandall (scrandall)</p> <p>Hello!</p> <p>Way before shortcuts in Algebra II, Trig, and Calculus, most teachers would agree that shortcuts for determining divisibility are most useful. Where rules for 2 and 5 can be more easily explained, the rule for divisibility by 3 is more often left to "see it works everytime like 2 and 5 did" in its explanation. Looking for the patterns IS powerful stuff, and can make for brilliant cognitive connections, up to 8th grade and beyond for many students. But for advanced twelve year olds with emergent formal thought processes, the demonstration or construction of informal proofs for the divisibility of 3 is the kind of thing that separates advanced study from accelerated study. It opens up brain channels so they can begin making their associative constructions off more complicated patterning.</p> <p>Yours, Steve</p> <p>PS. Constructivism isn't always easy. After watching them work without success to get my honors class last Friday to come up with patterns for triangular number or square number sequences, I gave a few hints. Well, they shut down and waited for me to finish off the generalized ideas. When I told them that I couldn't solve these problems and that they had to do it, I was told with a chorus of voices that "If the teacher can't do it how do you expect us to?!" I will trick them into trying again on Monday!!</p>	Student talking to student	9t-32
<p>3:18) 11-NOV-2000 21:59 Fred G. Harwood (fharwood)</p>	Student talking to student	9t-11

Narrative	Analysis Categories	Code Line Count
<p>I like to give a big-picture of divisibility by asking them what 2, 5 and 10 tests have in common; what 4, 25, &amp; 100 have in common; what would be the test for 8, 125 or 1000 then? How might you determine if a 18 digit number was divisible by 32? or 128? or by <math>5^7</math>? What is the family of numbers mentioned here? What is the most important number?</p> <p>If you are wanting to experience some constructivism: Don't read my next posts until you've tried to answer these questions.</p>		
<p>3:19) 11-NOV-2000 22:17 Fred G. Harwood (fharwood)</p> <p>Once they've determined that 10, our base number, is important and that its factors and the powers of these numbers all share the same test of last digit(s) have them go after 9 since it is almost 10. Post many numbers of 2, 3 and 4 digits that are multiples of 9 for the students to generate the pattern of adding the digits to see if divisible by 9.</p> <p>(Many may already know it but you need to keep the various tests within the big picture) Ask if 9 has any factors that might share the same test. Have them verify that 3 works the same way.</p> <p>What else is almost 10? 11? [This is a fabulous number for seeking out divisibility tests! There are at least 6.] We're going to do a science experiment. Our purpose is to determine how to tell if a number is divisible by 11. Our materials are calculator, paper, pen. Our procedure is to</p> <ol style="list-style-type: none"> <li>a) multiply 10 random two-digit numbers by 11 and to look for possible ways to tell when they're divisible by 11.</li> <li>b) multiply 10 random 3-digit numbers by 11 and see if your pattern can be extended to 4 digit numbers. Make any adjustments that are necessary or abandon your pattern and go back to a) for another pattern.</li> <li>c) create larger multiples of 11 to test or modify your tests to 5-digit and larger numbers.</li> <li>d) write up your test for others to understand how to do your test.</li> </ol>	<p>Student talking to student</p>	<p>9t-45</p>

Narrative	Analysis Categories	Code Line Count
<p>The next day or even later in that block have students teach the class their method and have groups discuss which idea(s) is the most efficient, effective, or helpful. Have the class try to reach consensus. Here you'll notice creators defend their ideas strongly (really good life skill) but leave the option for them to adopt their own but I would write up the one that looks the most like the te andor 9. Higher levels of math might try to prove why the various tests work algebraically.</p> <p>I like to them assign the test for 7 for homework with my Gr. 9's. You can then show how composite numbers like 6, 15 etc. work with 2&amp;3 and 3&amp;5. Have them decide why 12 has to be 3&amp;4 and not 2&amp;6.</p>		
<p>3:20) 11-NOV-2000 23:17 Steve Crandall (scrandall)</p> <p>Those are great! And pointing out that the product of 7 and 11 and 13 is 1001 may be telling them enough (without giving it all away) that there is a simultaneous test for all three. But isn't the point that grinding out the work here is ultimately more productive than the shortcut itself. I can assess much more mathematical connectedness from the work students develop trying to do this than from the application of the resulting "test".</p> <p>Yours, Steve</p>	Student talking to student	9t-10
<p>3:21) 12-NOV-2000 00:02 Fred G. Harwood (fharwood)</p> <p>Exactly so, how many times have you needed to test a 14 digit number for divisibility by 7? I certainly discuss with them the wonder that they can do this from their mathematical knowledge and share that I use the tests frequently when designing questions for them during a lesson that will have these attributes and that the real application for this type of work is in computer codes, bank codes etc. that are built by composites of two extremely large prime numbers. Mathematicians are actively seeking more efficient ways to prime factor numbers and to create them. We need to acknowledge that the most commonly used test for divisibility is a</p>	Student talking to student	9t-33

Narrative	Analysis Categories	Code Line Count
<p>calculator. It is the mathematics that flows from the investigation that is important and the empowering of the individual to go faster or further than a calculator.</p> <p>I find it fascinating that 7, 11 &amp; 13 (and 91) share many traits (such as factors of 999 999. Is the 1000+1 the driver or is it 100000-1 which creates the impact? The more in-depth I go the greater the linkages. [And if you get me going on decimal patterns, we'll be here for a long time! They are now one of my main classroom research areas and a passion of mine.]</p> <p>In a constructivist class, we would build upon their connections and discoveries to unveil the mathematics and mathematical behaviours that underlie the structure and the pursuit of understanding.</p> <p>Are there any ideas on revealing these accomplishments for their families?</p>		
<p>3:22) 12-NOV-2000 03:31 Christine Palmer (cmpalmer)</p> <p>"Are there any ideas on revealing these accomplishments for their families?" How about sending post cards home to "the family of..." on which the student is congratulated "for being a great mathematical thinker because..." and whatever it was that so impressed you is explained? Both students and parents thoroughly appreciate such notification, especially because it comes "out of the blue."</p> <p>On the topic of higher level thinking, one of my students, last year, asked me why her earlier teachers hadn't forced her to think. She said, "It's like we've always been told 'do this, and you'll get this' and we did it. It's like we were just being programmed, like computers, instead of being challenged to understand why and how and to figure things out for ourselves. But when you figure something out, and understand it, you don't forget it, because it makes sense."</p> <p>I've just completed a grad course about the five "Dimensions of Learning." Found it absolutely fascinating, very useful, and experienced several "AHA's". Have you ever thought about</p>	Student talking to student	9t-36

Narrative	Analysis Categories	Code Line Count
<p>problem solving not just as requiring critical thinking, but also relying on thinking creatively? I suppose I sort of knew this before, because I have read some of the recent research about the brain. However, I never realized that if a student has not been taught how to think creatively, s/he may not have the persistence necessary to successfully tackle a problem. This connection between the problem-solving process and thinking creatively just socked me between the eyes. No wonder there appears to be a connection among music, the arts, and mathematics!</p>		
<p>3:23) 12-NOV-2000 12:54 Fred G. Harwood (fharwood)</p> <p>Excellent points, Christine. As a newer teacher, I told my students, "And I'll give up to five marks for creativity." only to be disappointed by many of their efforts. As a wiser veteran, I teach them ways to be creative, give examples of it and have them create together extensions to a set problem so they can experience the process.</p> <p>One technique I use is the mnemonic SCAMPER -  S ubstitute  C ombine  A dapt  M odify (Magnify, minify)  P ut to other uses  E liminate  R everse</p> <p>I have found it really helpful to design my own unit planning form that contains a wide variety of strategies, metacurricular ideas and skill sets, thinking processes, behaviours, reflection hints and assessment planning. I took many of the ideas from Susan Close's Learning for Success team's approaches. Beyond Chalk and Talk (1992), Reaching for Higher Thought (1988), Tomorrow's Classroom Today (1990), Thoughtful Interactions (1997). This is powerful to me because it reminds me of what is important and what I know or want to know. I forget what I know so easily. I have it in Pagemaker 4 so I'm not sure if Sharon could convert it successfully to pdf or something else. It is on a legal portrait page so that it folds in</p>	<p>Student talking to student</p>	<p>9t-33</p>

Narrative	Analysis Categories	Code Line Count
panels about the central planning grid.		
<p>3:24) 14-NOV-2000 15:30 Rick Norwood (rnorwood)</p> <p>I don't know. I have learned a lot of divisibility tests, and I do a lot of math with natural numbers, but the only divisibility tests I ever use unless I'm teaching divisibility tests are the obvious ones about 2, 5 and 10.</p> <p>I often ask myself, what do I use? I do a lot of math every day. If I never use something, what is the chance that a student will?</p> <p>Billie -- It takes many patient, caring teachers to overcome the damage done by one impatient, uncaring teacher. Once a student is told "That's a stupid question," it may be years bnce e they open up again to a teacher. And virtually every student I have ever discussed this with has heard "That's a stupid question," from at least one teacher.</p> <p>Steve -- One trick I've used to get students to problem solve is this. I sit down. This physically throws the burden of solving the problem onto them. Also, I never give hints. Instead, I ask questions. What would happen if... ?</p>	Student talking to student	9t-21
<p>3:25) 14-NOV-2000 15:48 Steve Crandall (scrandall)</p> <p>That sounds good, Rick!</p> <p>I set the students to work on some missing terms in series,working together if they wished. After they warmed up and felt successful, I redirected them to the problem from last Friday asking "if the series work could be used here". Most saw the similarities immediately (the sum of two series).</p> <p>I just have difficulty sitting down and staying down; maybe I have picked that trait up from my 8th grade students!! I will try to make myself wait a little longer!</p> <p>Could anyone explain what 'algebra mats' are and where you'd use them?</p>	Student talking to student	9t-14

**Convergent Response**  
**Factual Lecturing**  
**Gives or asks for Resources**  
**Student talking to student**

**8c-11**  
**5f-148**  
**5R-123**  
**9t-367**

**Workshop 1**

**Table # 82: Workshop 1 Item 4, Teacher Talk Orientation Lecturing**

Narrative	Analysis Categories	Code Line Count
<p><b>Workshop 1 Item 4</b> Mathweb 2000 Center , Workshop 1 , Item 4</p>		
<p>Part II Item 4 31-OCT-2000 01:26 Susan Doherty (squinnxx)  4:1) 31-OCT-2000 02:12 Susan Doherty (squinnxx)  <a href="http://rheingold.caucus.com/~ra1/LIB/workshop_1/squinnxx/00040001/frame.htm">http://rheingold.caucus.com/~ra1/LIB/workshop_1/squinnxx/00040001/frame.htm</a>  If you are unable to view the slideshow, the content is provided here:</p>	Orientation Lecturing	5O-4
<p>II. Mathematics Portfolio Assessment  From 1993-1998, Kentucky Mathematics Portfolios were part of the state assessment and accountability system, the last two years of that time in research and development. Teachers continue to implement them in various forms and grade levels in their classrooms. The schools most successful with mathematics portfolios were the ones that implemented "schoolwide" portfolios. Students at all grade levels kept a portfolio, with at least a couple of entries, so that they were prepared for the accountability years. The process for accountability was structured, complicated, and time-consuming, but teachers continue to acknowledge that a portfolio provided the best vehicle for analyzing student work and seeing what students really know and are able to do. Portfolios also forced teachers to learn the mathematics content because they had to be able to score them, and much professional development was developed related to the portfolio process.  Guidelines for generating student work for Mathematics Portfolios for the Kentucky state assessment (KIRIS) is provided below.  Guidelines for Generating Student Work for Mathematics Portfolios  Philosophical Guidelines/Code of Ethics</p>	Gives or asks for Resources	5R-215

Narrative	Analysis Categories	Code Line Count
<p>The KIRIS Mathematics Portfolio Assessment acknowledges the students as sole creators, authors, and owners of their work.</p> <p>Students must have total ownership of their mathematics. Any intervention from teachers, peers, and/or others should enhance rather than remove or diminish that ownership and should be offered in the spirit of helping students re-assess their own work. Teachers serve as colleagues, facilitators, coaches, mentors, and critics. Parents, friends, and other students assume roles of listeners, responders, and encouragers. At no time should students' ideas, revisions, or editing be characterized as teacher-authored, peer-authored, or parent-authored.</p> <p>Applied Guidelines</p> <p>The goals of mathematics portfolio assessments are to:</p> <p>Provide students with the skills, knowledge, and confidence necessary to become independent thinkers and problem solvers.</p> <p>Enable students to gain mathematical power as they explore a variety of mathematical core concepts and principles.</p> <p>Document students' performance on multiple tasks over time.</p> <p>Merge instructional and assessment activities. Provide information upon which to base ongoing development of curriculum that is responsive to student needs.</p> <p>Quality portfolio assessment makes it possible for teachers to identify accurately the learning needs of individual students and student groups, to review the appropriateness of curriculum goals and content, and to evaluate the quality of their own teaching. In effective learning environments, assessment and instruction are inexorably linked.</p> <p>The following Guidelines are intended to provide teachers, students, and others with specific ways to establish an ethical working relationship</p>		

Narrative	Analysis Categories	Code Line Count
<p>between classroom mathematics instruction and the KIRIS assessment of mathematics portfolios.</p> <p>Instruction</p> <p>The purpose for mathematics INSTRUCTION is to enable every student to gain mathematical power. The Curriculum and Evaluation Standards for School Mathematics, NCTM, defines mathematical power as:</p> <p>. . . an individual's abilities to explore, conjecture, and reason logically, as well as the ability to use a variety of mathematical methods effectively to solve problems. This notion is based on the recognition of mathematics as more than a collection of concepts and skills to be mastered, it includes methods of investigating and reasoning, means of communication, and notions of context. In addition, for each individual, mathematical power involves the development of personal self-confidence. (p.5)</p> <p>To fulfill this purpose teachers should:</p> <p>Provide and identify for the student a variety of tasks that address the Core Content Strands of the Analytic Piece Scoring Guide.</p> <p>Offer whole class/group instruction and practice involving problem solving as listed on the Analytic Piece Scoring Guide.</p> <p>Maintain a supportive environment that allows for different learning styles and provides rich resources with ample problem solving time in and out of class.</p> <p>Problem Solving – using a variety of problem solving strategies and activities such as guess and check, draw a picture, construct a model, make an organized list, etc. For portfolio entries, the student will solve a problem based on the core content, by choosing and applying the strategy, communicating using representations and mathematical language, drawing a conclusion, and supporting/verifying a conclusion.</p> <p>Reasoning – developing the ability to construct</p>		

Narrative	Analysis Categories	Code Line Count
<p>valid arguments in problem settings and evaluate the arguments of others. Portfolio entries will include a student's explanations of strategies, solutions and validations of mathematical conjectures.</p> <p>Mathematical Communication – communicating the understanding of mathematics through posing problems, asking questions, representing ideas, and describing relationships. Portfolio entries will communicate the student's clear understanding of the mathematics and processes used.</p> <p>Understanding/Connecting Core Content – realizing mathematics is an integrated whole rather than an isolated set of topics and is relevant and useful in everyday life. In portfolio entries, students will explain/state the connections within and among mathematics.</p> <p>Feedback</p> <p>Feedback should be given to the students whenever the teacher feels it is appropriate. Feedback occurs by conferencing with students individually, group conferences, peer reviews, and post-it-notes. It is essential, however, that during these conferences the students retain ownership of his/her work. Teachers and/or others will not at any time actually solve the problem on portfolio entries, do the mathematics, or do the writing. The teacher will support the student in self-assessing and making final decisions; however, the student will decide what to incorporate and what to reject.</p> <p>Responders should:</p> <p>Question rather than dictate.  Coach rather than correct.  Model rather than solve.  Critique rather than criticize.  Provide feedback rather than edit.  Guide rather than direct.  Suggest rather than impose.</p> <p>Revision</p> <p>The general guideline concerning checking and revising is that the student will make decisions</p>		

Narrative	Analysis Categories	Code Line Count
<p>about what to add, delete, or change. The student should check by verifying that the solution works and makes sense; communicate concepts, ideas, and reflections clearly; implement an appropriate strategy with reasoning; and use appropriate mathematical representations and language. Phase II teachers found that one revision was usually sufficient. When revising:</p> <p>Teachers should raise questions to clarify the student's strategy, reasoning, and solutions.</p> <p>Teachers should teach students how to review and revise their mathematics with each other while providing class time for this exchange to take place.</p> <p>Peers may read each other's solutions and offer written or spoken responses and suggestions for the student to consider.</p> <p>Teachers may develop a revision checklist for students to use with their own mathematics and in conferencing with peers.</p> <p>Teachers should ask students to discuss their revisions and the rationale behind them.</p> <p>Teachers and students should ensure that the student has the final say in the revisions he/she makes in the portfolio entry.</p> <p>Teachers and students should decide how many revisions are sensible.</p> <p>Assembling the Assessment Portfolio</p> <p>Throughout the year, students will have solved a variety of problems involving the four core content strands. Students may keep drafts of this work in a folder. However, all students will SELECT 6 PIECES from this folder when they assemble their assessment portfolio (one from each of the core content strands, 1 from the KDE Sample Task Booklet, and 1 other).</p> <p>Guidelines for assembling the assessment portfolio are:</p> <p>The student determines the point at which</p>		

Narrative	Analysis Categories	Code Line Count
<p>his/her mathematics is ready to be assembled. Many forms are acceptable (videotape, regular manuscript, photographs, computer disk, etc.), but the work should be a size that will fit the portfolio cover used by the district. If not, the item will need to be stored elsewhere and referenced in the assessment portfolio.</p> <p>The entry should be neat and legible. Students may use many methods to produce their final pieces (pen or pencil, printing or cursive, word processor or typewriter). Regardless of the method selected, students must do all the work by themselves unless the Individual Education Plan (IEP) documents permissible adaptations. It is suggested that students and teachers not use valuable classroom instruction time to type the portfolios.</p> <p>Students should be aware that their portfolio entries may be used for benchmarks, exemplars, and/or items in staff development workshops.</p>		
<p>4:2) 31-OCT-2000 02:17 Sheila Vice (svice)</p> <p>Scoring Rubrics for Portfolios--Holistic</p> <p>The scoring guide used in the KIRIS accountability system from 1993-1996 was a Holistic Scoring Guide.</p> <p>Using this rubric, the portfolio of 5-7 pieces was scored as a whole. The overall score reflected the level at which the appropriate descriptors for a portfolio were clustered.</p> <p>Tasks were categorized as:</p> <p style="padding-left: 40px;">           INVESTIGATIONS/DISCOVERY            APPLICATIONS            NON-ROUTINE PROBLEMS            PROJECTS            INTERDISCIPLINARY            WRITING         </p> <p>The use of "Tools" such as manipulatives, calculators, and other technology was scored, a letter to the reviewer was required, and a group entry was allowed. All grade levels 5, 8, and 12 used the same rubric. Below is the "Holistic</p>	<p>Gives or asks for Resources</p>	<p>5R-25</p>

Narrative	Analysis Categories	Code Line Count
<p>Scoring Guide” for Kentucky Mathematics Portfolios:</p> <p>Holistic Scoring Guide  <a href="http://rheingold.caucus.com/~ra1/LIB/workshop_1/squinnxx/00040002/SV_Part_II-2a.doc">http://rheingold.caucus.com/~ra1/LIB/workshop_1/squinnxx/00040002/SV_Part_II-2a.doc</a></p>		
<p>4:3) 31-OCT-2000 02:23 Sheila Vice (svice)            Scoring Rubrics for Portfolios--Analytic</p> <p>In 1996, the Kentucky Mathematics Portfolio was withdrawn from the accountability index, and placed in a research and development program. During the three phases of this program, several hundred teachers experimented with simplified procedures for developing the portfolio and during the 1997-98 school year all schools were invited to participate voluntarily implementing the changes.</p> <p>In an effort to find the best way to score portfolios, several different rubrics were evaluated. As a result, grade-specific analytic rubrics applied to individual pieces were adopted. Changes included:</p> <p>Letter to the reviewer eliminated            Tasks shortened to problem-solving tasks            Scoring limited to Approach/Strategy, Language and Representation, and Solution            Rubrics specific to grade levels            Rubrics designed as 2 pages—process and content            Individual pieces scored</p> <p>Since the 1998-99 school year, the portfolio is a voluntary option for instructional improvement. Below are the grade-level specific rubrics:</p> <p>Scoring Rubric</p> <p><a href="http://rheingold.caucus.com/~ra1/LIB/workshop_1/squinnxx/00040003/SV_Part_II-2c.doc">http://rheingold.caucus.com/~ra1/LIB/workshop_1/squinnxx/00040003/SV_Part_II-2c.doc</a></p> <p><a href="http://rheingold.caucus.com/~ra1/LIB/workshop_1/squinnxx/00040003/SV_Part_II-2c.doc">http://rheingold.caucus.com/~ra1/LIB/workshop_1/squinnxx/00040003/SV_Part_II-2c.doc</a>            Excerpt:</p> <p>Grade 5 Mathematics Analytic Piece Scoring</p>	<p>Gives or asks for Resources</p>	<p>5R-102</p>

Narrative	Analysis Categories	Code Line Count
<p>Rubric O (A) 1(B) 2 (C) 3 (D) 4 (E)</p> <p>Apply an Approach/ Strategy -by implementing a strategy (ies) through representations such as pictures, charts, symbols, graphs, and/or notation</p> <p>Correctness of Language and/or Representations - by communicating using mathematical vocabulary and representations, such as pictures, charts, symbols, graphs, and/or notation embedded within the entry</p> <p>Makes an attempt to implement a strategy, but does not address the task</p> <p>Makes an attempt to use mathematical vocabulary and/or representations, but does not address the task</p> <p>Implements an inappropriate strategy or an appropriate strategy incorrectly</p> <p>Uses inaccurate mathematical vocabulary and/or representations; or uses only the mathematical vocabulary and/or representations that are stated in the task</p> <p>Implements an appropriate strategy but mathematical reasoning (support) is unclear or incomplete – knows the what to do</p> <p>Shows conceptual understanding although minor errors or omissions may be present in mathematical vocabulary and/or representations</p> <p>Correctly implements an appropriate strategy and completely supports the mathematical made – knows that what to do and why it's being done</p> <p>Uses accurate mathematical vocabulary and representations embedded within the entry for all parts of the problem</p> <p>inappropriate 1 – could not lead to correct solution even if it were implemented correctly or leaves out/misinterprets information necessary to solve</p>		

Narrative	Analysis Categories	Code Line Count
<p>appropriate 2 - leads to the correct solution if implemented correctly</p> <p>mathematical vocabulary 3 – means defined by any standard mathematics dictionary</p> <p>minor errors 4 – mistakes that do not change the understanding of the concept</p> <p>omissions 5 – signs, tables, square units, etc. not consistently present</p> <p>embedded 6 – positioning representations in order to clearly communicate a sequential development of the solution</p> <p>Conclusion by showing and explaining the reasonableness/correctness of the answer – does it make sense Does not have a solution that addresses the task</p> <p>Inaccurate/incomplete solution to the problem Shows complete solution, may have minor errors, but reasonableness of the answer is unclear or incomplete</p> <p>Solves all parts of the problem correctly and completely and clearly shows/explains reasonableness of the answer</p> <p>inaccurate solution – major conceptual errors or incorrect solution(s) reasonableness – there are gaps where the reader must go back and make linkages between the mathematical representations and explanation</p>		
<p>4:4) 31-OCT-2000 02:29 Sheila Vice (svice)</p> <p>Comparing Open-Response and Portfolio Tasks</p> <p>You may be interested in how the two types of constructed response items differ in implementation. A comparison is provided below:</p> <p>Similarities KIRIS Mathematics Open Response &amp; Portfolios Tasks</p> <p>Both complement each other</p>	<p>Gives or asks for Resources</p>	<p>5R-56</p>

Narrative	Analysis Categories	Code Line Count
<p>Both are based on the Core Content for Mathematics Assessment and the Academic Expectations</p> <p>Both require students to apply skills and concepts, instead of doing them in isolation</p> <p>Both encourage students to show thinking and reasoning about mathematics</p> <p>Both are alternative forms of assessment – require students to construct their own response instead of choosing from a set of responses (like multiple choice)</p> <p>Differences KIRIS Mathematics Open Response Tasks Mathematics Portfolio Tasks</p> <p><u>On demand</u> – student has one opportunity to respond to the task within a specific time frame at a single sitting. Over a period of time – student can revise and edit a response.</p> <p>Students must complete tasks on their own with only test-specific resources provided with the test booklet.</p> <p>Students may use any resource to solve tasks.</p> <p>Assesses material from the Core Content but may not specifically assess the teacher's classroom objectives.</p> <p>Assesses material covered in the classroom from all Core Content Strands.</p> <p>KIRIS provides task selection for assessment.</p> <p>Teacher provides the task from which students select their entries.</p> <p><u>Short response</u> – response is designed to be completed in a limited amount of time (10 to 15 min.).</p> <p><u>Expanded response</u> – task may require more than one class period to complete.</p> <p>Requires students to apply skills and show</p>		

Narrative	Analysis Categories	Code Line Count
<p>understanding of concepts that may or may not be in a problem-solving context.</p> <p>Requires students to demonstrate an understanding of mathematical relationships and show connections within mathematics in a problem-solving context.</p> <p>Task specific scoring rubric emphasizes correctness. Generic analytic scoring guide emphasizes application of approach/strategy and mathematical defense of solution as well as correctness.</p>		
<p>4:5) 02-NOV-2000 19:19 Pamela D. Leger (bayoumath)</p> <p>I am unable to view either rubric. How?</p>	<p>Student questioning another student</p>	<p>9Q -1</p>
<p>4:6) 02-NOV-2000 19:45 Susan Doherty (squinnxx)</p> <p>If using Netscape, you should be able to follow one of the two links to view the document. If using Explorer, you should see the document in a window.</p> <p>However, I will work with the documents to see if there is another option for posting them.</p> <p>If you have difficulties with any part of the conference, please post a comment in the Help Desk item of the Arrival Harbor.</p>	<p>Gives directions: physical action on the part of the learner.</p>	<p>6 -9</p>

**Gives directions: physical action on the part of the learner.**

**6-9**

**Gives or asks for Resources**

**5R-398**

**Orientation Lecturing**

**5O-4**

**Student questioning another student**

**9Q-1**

**Workshop 1**

**Table # 83: Workshop 1 Item 5, Teacher Talk Gives or Asks for Resources**

Narrative	Analysis Categories	Code Line Count
<p><b>Workshop 1 Item 5</b> Mathweb 2000 Center, Workshop 1 , Item 5</p>		
<p>Part III Item 5 31-OCT-2000 01:26 Susan Doherty (squinnxx) 5:1) 31-OCT-2000 02:32 Sheila Vice (svice)</p> <p>III. Parent/Community Strategies for School-Wide Improvement</p> <p>Take the Test Day</p> <p>Engage your school's community in the action of improving student achievement. Schedule a "Take the Test Day" for parents and others. Below is an excerpt from the website and sample from the middle school mathematics section, but you can go to the web for more information and to see the "Take the Test Day" materials</p>	Gives or asks for Resources	5R-11
<p>5:2) 31-OCT-2000 02:37 Sheila Vice (svice)</p> <p>School Report Card</p> <p>Parents and community members become more involved with the school and with your mission for higher achievement if they understand what is going on in the school, how the students perform, what the strengths are, and what is needed for improvement. Keep in touch with your community through a "School Report Card." You can find all the information and templates for all grade configurations here.</p>	Gives or asks for Resources	5R-10
<p>5:3) 31-OCT-2000 02:40 Sheila Vice (svice)</p> <p>Standards and Indicators for School Improvement</p> <p>The "Scholastic Audit" process in Kentucky uses the Standards and Indicators for School Improvement document as the measure of a school's preparedness for improvement. The process allows schools to focus on their specific needs and to begin to determine what actions need to be taken to improve student learning</p>	Gives or asks for Resources	5R-57

Narrative	Analysis Categories	Code Line Count
<p>and performance. Below you will see an excerpt page related to assessment from Standards and Indicators and the full document can be found here.</p> <p>Standards and Indicators for School Improvement</p> <p>Standard 1: The school develops and implements a curriculum that is rigorous, intentional, and aligned to state and local standards.</p> <p>Standard 2: The school utilizes multiple evaluation and assessment strategies to continuously monitor and modify instruction to meet student needs and support proficient student work.</p> <p>Standard 3: The school's instructional program actively engages all students by using effective, varied, and research-based practices to improve academic performance.</p> <p>Standard 4: The school/district functions as an effective learning community and supports a climate conducive to performance excellence</p> <p>Standard 5: The school/district works with families and community groups to remove barriers to learning in an effort to meet the intellectual, social, career, and developmental needs of students.</p> <p>Standard 6: The school/district provides research-based, results driven professional development opportunities for staff and implements performance evaluation procedures in order to improve teaching and learning.</p> <p>Standard 7: The school/district instructional decisions focus on support for teaching and learning, organizational direction, high performance expectations, creating a learning culture, and developing leadership capacity.</p> <p>Standard 8: The organization of the school/district maximizes use of time, all available space and other resources to maximize teaching and learning and support high student and staff performances.</p>		

Narrative	Analysis Categories	Code Line Count
Standard 9: The school/district develops, implements and evaluates a comprehensive school improvement plan that communicates a clear purpose, direction and action plan focused on teaching and learning.		
<p>5:4) 01-NOV-2000 19:36 Maurice Burke (burke)</p> <p>Hi Sheila:</p> <p>I have really enjoyed the ideas and resources you have presented. One of your school improvement standards intrigued me. It is Standard 2. How is this typically done in schools you work with? Is it left up to individual teachers in their own classes or is it something else?</p>	Initiated Comment	9i-6
<p>5:5) 03-NOV-2000 16:30 Sheila Vice (svice)</p> <p>Thanks, Maurice. Because we have state assessment, many principals require teachers to include open-response questions, performance events, and other types of assessment in their weekly lesson plans, so that students become more adept at explaining their work, using calculators, protractors, etc. on the state assessment. We have had extensive leadership training for principals, and it has helped greatly with their understanding of what multiple assessments really mean and how to help teachers implement them. The state writing portfolio folks have also developed "benchmarks" of what proficient student work looks like, and the other subject areas are probably going to do the same. When we had Math Portfolios, we also had examples of proficient and distinguished student work that we shared with teachers. Interestingly, when schools do a Scholastic Audit which includes responding to these standards, the teachers begin to ask themselves what it means! And then.....</p>	Personal Lecturing	5P-23
<p>5:6) 03-NOV-2000 16:46 Maurice Burke (burke)</p> <p>Thanks Sheila. One more question, and forgive me for not knowing what this is, what is a "Scholastic Audit?"</p>	Initiated Comment	9i-3

**Gives or asks for Resources**  
**Initiated Comment**  
**Personal Lecturing**

**5R-78**  
**9i-9**  
**5P-23**

**Workshop 1**

**Table # 84: Workshop 1 Item 6, Teacher Talk Praises of Encouragement**

Narrative	Analysis Categories	Code Line Count
<p><b>Workshop 1 Item 6</b> Mathweb 2000 Center, Workshop 1 , Item 6</p>		
<p>Item 6 31-OCT-2000 01:27 Susan Doherty (squinnxx)</p> <p>6:1) 31-OCT-2000 01:27 Sheila Vice (svice)</p> <p>To all educators who participated in the Math Web conference and in this School-Wide Objectives workshop, I hope that you found a tool or strategy that is useful to you. I want to thank my KDE and Regional Mathematics Consultants, particularly Ann Bartosh, Bill Kunnecke, Carolyn Hornbeck, and Vonda Stamm, for their help and support of this project. It was a technological learning experience for me-that everyone should experience at least once! Happy Mathematics Trails!</p> <p>Sheila Vice</p>	Praises or Encourages	2-11
<p>6:2) 02-NOV-2000 21:04 Jeanine Brizendine (eteacher)</p> <p>Thank you Sheila for the information. I am trying to work with elementary teachers new to the constructivist philosophy. They struggle with what to put in a portfolio outside of the traditional tests. You offered me more ideas in your guidelines, as well as gave me another tool to work from while I plan with them.</p>	Convergent Response	8c-7
<p>6:3) 03-NOV-2000 08:55 Michael E Matthews (hamath)</p> <p>Great workshop. I took advantage of the links and learned some more about assessment and school improvement. Thanks.</p>	Convergent Response	8c-4
<p>6:4) 05-NOV-2000 06:18 Daniel Lemay (lemayd)</p> <p>A Vermont student's official portfolio is only to contain problem-solving tasks. I am trying to move beyond this to include other types of work.</p>	Student share experiences and/or solutions	9s-10

Narrative	Analysis Categories	Code Line Count
<p>This work will not be assessed beyond my classroom, but I like to include other "snapshots" of student work. I came across this Georgia teacher's web page for an algebra 2 portfolio and found it interesting. Here is the link <a href="http://www.geocities.com/TimesSquare/Portal/9068/ssalgllproj.html">http://www.geocities.com/TimesSquare/Portal/9068/ssalgllproj.html</a></p>		
<p>6:5) 06-NOV-2000 16:59 Johnny Lott (lott)  Thanks Sheila.</p>	Convergent Response	8c-1
<p>6:6) 07-NOV-2000 10:38 William Bramlett (advocate_bill)  More educators should read this. I like the idea that the principals were inserviced as a way to bring more knowledge and focus to the assessment effort. Too often this is neglected.</p>	Convergent Response	8c-4
<p>6:7) 07-NOV-2000 13:34 Luke Dowell (ldowell)  Thanks Sheila, I have used and will be using a lot of your information as we create a math program assessment at our community college.</p>	Convergent Response	8c-3

<b>Convergent Response</b>	<b>8c-19</b>
<b>Praises or Encourages</b>	<b>2-11</b>
<b>Student share experiences and/or solutions</b>	<b>9s-10</b>

**Workshop 2**

**Table # 85: Workshop 2, Item 1, Practical Ideas for Performance Tasks**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb 2000 Center, Workshop 2</p> <p>Steve Leinwand Mathematics Supervisor, Connecticut Department of Education former member,Mathematical Sciences Education Board of the National Research Council, Past-President, National Council of Supervisors of Mathematics</p> <p>1 Workshop 2: Practical Ideas for Performance Tasks 0</p> <p>2 Introduction - What are Performance Activities? 1</p> <p>3 Then and now - A Before and After Look at Assessing Mathematical Understanding 26</p> <p>4 Creating High Quality Performance 5 Tasks 19</p> <p>5 Scoring Tasks 23</p> <p>6 Exemplar Tasks for Exploration and Use 23</p> <p>Workshop 2 Toby Sheppard Bloch (tsb), Organizer</p>		
<p>Workshop 2 Item 1</p> <p>Workshop 2: Practical Ideas for Performance Tasks</p> <p>Item 1 11-SEP-2000 20:44 Susan Doherty (squinnxx) Practical Ideas for Creating and Using Performance Tasks in Your Classroom</p> <p>We'll use examples to model creating and using performance tasks for both instruction and assessment of key mathematical ideas.</p> <p>Steve Leinwand is a mathematics supervisor with the Connecticut Department of Education.</p>	<p>Gives directions: physical action on the part of the learner</p> <p>Factual Lecturing</p>	<p>6-3</p> <p>5f-12</p>

Narrative	Analysis Categories	Code Line Count
<p>He is responsible for a broad array of activities, including curriculum development, professional development, program evaluation, and student and teacher assessment, as they relate to the improvement of school mathematics. Steve is a former member of the Mathematical Sciences Education Board of the National Research Council and is past-president of the 2,600 member National Council of Supervisors of Mathematics.</p>		

**Gives directions: physical action on the part of the learner**  
Factual Lecturing

**6-3**  
**5f-12**

**Workshop 2**

**Table # 86: Workshop 2, Item 2, Introduction, What are Performance Activities?**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb 2000 Center, Workshop 2, Item 2</p> <p>Item 2 30-OCT-2000 22:03 Susan Doherty (squinnxx)</p>		
<p>Introduction - What are Performance Activities?</p>	<p>Asks factual questions</p>	<p>4f-1</p>
<p>2:1) 30-OCT-2000 22:17 Steve Leinwand (sleinwand)</p> <p>At their core, Performance Activities are carefully planned opportunities for students to actively perform - that is, demonstrate clearly what they know and are able to do.</p> <p>Performance Activities are therefore opportunities for students to:</p> <p>1.Do Math, 2.in a Situation, 3.for a Purpose.</p> <p>Doing Math means solving problems; In a Situation means there is a context, givens and goals; and For a Purpose means human goals and a definable audience.</p> <p>High quality performance activities have the following characteristics:</p> <p>They focus on essential (not tangential) mathematics;</p> <ul style="list-style-type: none"> <li>They are authentic (not contrived);</li> <li>They are equitable (not biased);</li> <li>They are rich (not simplistic);</li> <li>They are engaging (not ho-hum boring);</li> <li>They are active (not passive); and</li> <li>They are accessible (not arcane and alien).</li> </ul>	<p>Factual lecturing</p>	<p>5f-4</p>

**Asks factual questions**  
**Factual lecturing**

**4f-1**  
**5f-4**

**Workshop 2**

**Table # 87: Workshop 2, Item 3, Then and Now**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 2 Item 3</p> <p>Then and now - A Before and After Look at Assessing Mathematical Understanding</p> <p>Item 3 30-OCT-2000 22:09 Susan Doherty (squinnxx)</p> <p>Then and now - A Before and After Look at Assessing Mathematical Understanding</p>		
<p>3:1) 30-OCT-2000 22:16 Steve Leinwand (sleinwand)</p> <p>Before we'd ask: Find the quotient of <math>10 \div 1.59</math>. Now: We can give students the following data:</p> <p>Big Macs - \$1.59 each You have \$10.00</p> <p>And ask students to create and solve (with written or verbal explanations) problems based on the data.</p> <p>For example: About how many Big Macs can I buy? Exactly how many Big Macs can I buy, including tax? Can I buy 10 Big Macs? How much change will I get if I purchase x Big Macs? Suppose my friends also want friend fries, how many friends will I have enough money to treat? Before we'd ask: Find the perimeter of a given rectangle with the lengths of two adjacent sides given.</p> <p>Now: We can ask students to use 20 cm of ribbon and their ruler to design and draw a rectangular card that uses all of the ribbon as a border and then to calculate the length of the border - or perimeter - of their card.</p> <p>Before we'd ask students to express <math>1 \frac{3}{4}</math> as a decimal.</p> <p>Now: We can ask students to consider ordering <math>1 \frac{3}{4}</math> pounds of Land O'Lakes American</p>	<p>Designs pattern of learning experiences</p>	<p>3D.-52</p>

Narrative	Analysis Categories	Code Line Count
<p>cheese at the local deli. The clerk slices the cheese, places it on the scale and stops when the scale reads 1.34 pounds. Explain what you could say to the clerk to be sure you get the correct amount.</p> <p>Before we'd ask student to evaluate the expression: <math>F = 4(S-65) + 10</math> for <math>S = 81</math>.</p> <p>Now: We can ask students to consider the pricing scheme for speeding tickets in Vermont where the fine is \$4 for every mile over the 65 mph speed limit plus \$10 administrative fee, and ask questions like:  What is the fine if you were going 81 mph?  How fast must one have been going if the fine is \$102?  How much better off are you in Vermont at 80 mph than in Connecticut where you pay \$10 for every mph over 55 mph plus \$40 administrative fee?</p> <p>In other words, performance tasks help to operationalize the NCTM standards in terms of assessing problem solving, communication, and reasoning.</p> <p>They focus on important mathematical skills and concepts and invite students to use and strengthen their mathematical competencies.</p>		
<p>3:2) 03-NOV-2000 09:02 Michael E Matthews (hamath)  First of all I love it!! Actual examples of applying constructivism. Ok, on the <math>1 \frac{3}{4}</math> problem. This example seems flawed. What if the student thinks that <math>1 \frac{3}{4}</math> really is 1.34? Remember we would be trying to teach them how to solve these problems. Am I missing something here?</p>	Divergent response	9d-7
<p>3:3) 03-NOV-2000 09:07 Michael E Matthews (hamath)  Ok, on the <math>F = 4(S-65) + 10</math> for <math>S = 81</math>. Isn't there a time later on when you would need to go to the symbolic and teach or help them discover how to solve the symbolic too?</p> <p>I realize and agree with the premises you</p>	Evaluative response	9e-12

Narrative	Analysis Categories	Code Line Count
<p>presented in the introduction, however, what do we do about <math>F = 4(S-65) + 10</math> for <math>S = 81</math> when it is presented to our students later only in symbolic form. In real life they could solve it, but what about the SAT? What about the college professor who expects them to "obviously" know what they are talking about?</p>		
<p>3:4) 03-NOV-2000 09:51 Wilhelmina "Billie" Mazza (billiemscd) I find the last two questions interesting.</p> <p>Leinwald is, I believe, talking about assessing current level of understanding to provide the teacher/facilitator with information regarding next steps in facilitation student development.</p> <p>So perhaps some other questions might be, "What would be your next move for the student who believes that 1.34 is the same as <math>1 \frac{3}{4}</math>?" Or, "Did you start with the function rule and have students evaluate it? Or does a question such as the above come only after students have had a variety of experiences with translating situations into function rules?"</p>	<p>Evaluative response</p> <p>Student questioning another student</p>	<p>9e-4</p> <p>9Q-8</p>
<p>3:5) 03-NOV-2000 10:59 Fred G. Harwood (fharwood) Steve used this example in his closing keynote at the Pacific Northwest in Victoria, BC two weekends ago (great job, Steve!) He said that the clerk did type in 1.34 and then he had us decide what we'd say to the clerk. My personal favorite was, "Did I say one and three quarters? I meant one and seven fifths."</p> <p>Michael, I always prefer working with grass roots numbers or theory before going symbolic. It scaffolds their understanding better, improves their emotional state and their confidence at doing 'algebra'. An example is in our new textbook series. They teach adding and subtracting like terms first (algebra tiles are used as well but many teachers unfamiliar with them will leave much of these parts out) and then the last few questions of the practice involves using these skills to find the perimeter of some composite shapes. I teach it completely the other way around. I give them a</p>	<p>Student talking to student</p> <p>Student share experiences and/or solutions</p>	<p>9t-7</p> <p>9s-25</p>

Narrative	Analysis Categories	Code Line Count
<p>sheet of basic and composite polygons that grow to significant complexity and have them in their groups invent formulae for finding the perimeter. They intuitively understand the adding up of sides and grouping like lengths under a name (unknown). There is tremendous communication and reasoning when some sides are unclear and they have to piece together opposite sides to create them or subtracting known letters from them. I introduce curves et al. The next day I declare, "Oh yeah, you were all doing 'algebra!'"</p> <p>Steve, thanks for the incentives. In my Gr. 10 series/sequence unit I decided to ask, "Your boss says to take the case of 144 Bounce™ (fabric softener) boxes and build a pyramidal display." The boss then walks off leaving the job to you. What are you going to do? How many boxes would be on the bottom row? How many rows high would it be? What shape is the most efficient (uses the most boxes) and safe?</p> <p>The immediate response was a cry for more spoon-feeding of information but I informed them that I was busy, get solution oriented and stop whining about life not being fair. Seeing no further help from me, they dove into the problem with tremendous debate, reasoning, and communication. It also exposed those kids who claimed later to have 'The' answer and those who came for help because it wasn't clean enough a solution to be real math. "How will I be able to do this exactly right on the next math test?" . . . shudder. I also assigned 5 questions for homework. "Create and solve five of your own problems to test another student next day. Put your solutions on a separate sheet."</p> <p>It sure is fun to do real math. Thanks again for the inspiration, Steve. Any other good questions out there, folks?</p>	<p>Student talking to student</p>	<p>9t-28</p>
<p>3:6) 04-NOV-2000 00:41 Michael E Matthews (hamath) Thanks for the responses. So you usually go symbolic but later? Does this add enormous time to presenting a unit? At my present job I, miraculously, have complete control over the</p>	<p>Student questioning another student</p>	<p>9Q-14</p>

Narrative	Analysis Categories	Code Line Count
<p>curriculum. In addition, I can see the value of teaching concepts intuitively so they "Stick" instead of teaching a concept in seventh, eighth, ninth, and tenth and the students never getting it. However, how do you make it work in a regular school. I mean, after spending a few days (weeks) doing the real math, do you then follow up with a day of more skill and drill/(more symbolic) on the same subject, or do you just slowly incorporate it in the activities?</p>		
<p>3:7) 04-NOV-2000 10:54 berg martha (kmek)          Maybe I'm over my head here, as an elementary teacher, but I want my kids to discover through problem solving. To give them the 'before' before doing the 'now' seems backwards; I want them to discover or construct as they attempt to solve the problem, sharing ideas with one another along the way. My role would be to help them translate their solution strategies into the more symbolic.</p>	<p>Divergent response</p>	<p>9d-9</p>
<p>3:8) 04-NOV-2000 15:05 Fred G. Harwood (fharwood)          Some students don't make the connections in the time allotted but I offer extra help sessions and rewrites for those who need longer learning a unit. This last unit of Gr. 11 had very good test results and I was only one period longer than another teacher who didn't like her student's results as much. The real payoff comes from them holding the ideas longer with the greater depth of understanding and I've noticed them transferring previous ideas to new areas of the curriculum faster. I agree with Berg about learning the skills in application/problem solving.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-13</p>
<p>3:9) 04-NOV-2000 16:23 Steve Leinwand (sleinwand)          First of all - the question of PERFECTION: I have been struck over the past few years about the incredible difference between tasks that are appropriate for classroom instruction and those that are only good enough for large scale high stakes assessment. The latter need to be clear - even when open-ended. The latter cannot have too much ambiguity because students</p>	<p>Acknowledges student ideas</p>	<p>3a-21</p>

Narrative	Analysis Categories	Code Line Count
<p>cannot ask questions and need to be given clear instructions. HOWEVER - often tasks that are not good enough for large scale assessment are great for classroom instruction and assessment - they can be more ambiguous, more realistic and if not clear enough - so what - we can make any adjustments we need to. So, while nearly all tasks - especially the ones I've included in this workshop - leave something to be desired and can be improved - the important question is whether or not they induce mathematical thinking and help us assess understanding.</p>		
<p>3:10) 04-NOV-2000 16:27 Steve Leinwand (sleinwand) Martha - perhaps you misunderstood my "before" and "now" - but you are entirely correct and making my point - "Before" we "used to" ask the narrow skill driven question with one correct answer. "Now" we can, and in fact should, ask the more open questions and, exactly as you suggest, use it to get at skills as necessary, driven by the problem situation.</p>	<p>Accepts, Clarifies, student feelings</p>	<p>1-8</p>
<p>3:11) 04-NOV-2000 16:33 Steve Leinwand (sleinwand) Michael - You too are correct - I do expect all students to be able to manipulate reasonably simple linear equations and solve them (like the <math>F=4(S-65)+10</math>). However, in the past we started with the abstract and ended with a few kids doing an application or two while most were still back at the ranch wondering why the hell they needed to solve the equation that had no context in the first place. By starting with the context or the application we not only give kids a reason to learn the mathematics, we also invite alternative ways to solve the problem - which in turn leads to alternative ways to think about the mathematics. In the end, I believe that this approach empowers far more students and shortchanges far fewer.</p>	<p>Accepts, Clarifies, student feelings</p>	<p>1-16</p>
<p>3:12) 04-NOV-2000 16:36 Steve Leinwand (sleinwand) Fred - Thanks for your kind words. I agree with your analysis and comments entirely. I also</p>	<p>Praises or Encourages</p>	<p>2-6</p>

Narrative	Analysis Categories	Code Line Count
love the food store pyramid problem and how you handled it. All I know is that this type of approach is hard at first because it is new, but gets easier as the year goes on.		
3:13) 04-NOV-2000 21:35 Michael E Matthews (hamath) Steve, because of my recent course in Math leadership, reading of Piaget for the first time, and my own experience teaching, I am rapidly coming to this point of view too. Now I just have to learn to teach this way!!	Convergent response	8c-5
3:14) 05-NOV-2000 18:30 Steve Leinwand (sleinwand) Michael - Let me remind you of my often-quoted line that "it is unreasonable to ask a professional in this day and age to change by much more than 10% a year, but it is entirely unprofessional for professionals in this day and age to change by much less than 10%. So take your time - move steadily, but at a reasonable pace so as to avoid becoming overwhelmed.	Praises and Encourages	2-9
3:15) 05-NOV-2000 18:33 Fred G. Harwood (fharwood) We will all then be modeling change - thriving through change - as life-long learners and successful human beings.	Convergent response	8c-3
3:16) 07-NOV-2000 16:56 Brooke Bertholet (brooke) I, too, like Berg, am an elementary teacher and may be a bit in waters which are greater for me to "negotiate," despite my endless desire to accommodate the learning of my students through a modeling of a flexibility in the face of change.  Anyway, I do have a question. There has been a distinction made in this panel, as well as others, between classroom assessment and large-scale assessment. I understand it well, in context. Yet, in what, precisely, rests the difference between the two? I am tackling and trying to accommodate a professional view,	Convergent response          Evaluative response	8c-6          9e-9

Narrative	Analysis Categories	Code Line Count
<p>which finds it very hard to maintain this distinction at every corner.</p> <p>My classroom is a mirror of society, in microcosm, and what my students achieve should be both able to allow them to build a pyramid from containers of clothing softener as well as fully construct the number patterns in Pascual's Pyramid.</p> <p>Here, in the most simplest of ways, I think, there is a connection between the concrete and the abstract. Or am I mistaken? Also, does this kind of assessment distinction need to be retained? What kinds of adjustments need to be made to make the distinction less obvious, and possibly less obtrusive to all?</p> <p>In my corner of the world, the Spanish philosopher Fernando Savater echoes Fred's wonderful statement about thriving during endless change and understanding that the learning process is both for the "teacher" and the "student"---where we all are participants in an inquiry which can state, at any given moment, only where we are now. Tomorrow we will be at another point. Again, how can a distinction between classroom assessment and large-scale assessment be sustained when these are the kinds of pedagogical points which we are trying, precisely, to make for the quality of our student's lives? Thanks, again.</p>	<p>Factual response</p> <p>Evaluative response</p> <p>Student share experiences and/or solutions</p>	<p>8f-6</p> <p>9e-7</p> <p>9s-14</p>
<p>3:17) 07-NOV-2000 17:26 Fred G. Harwood (fharwood)</p> <p>Ah, the connections between concrete and abstract! Often, the connections are made after the fact or when you've created a rich investigation where they'll show the concrete. Do we not change a problem when a student can't do a computation to a monied example or food or a picture or a manipulative to hook the idea onto something they are already comfortable with? When we want to know how well a student understands something shouldn't we go the other way and have them apply their knowledge in a practical situation or in a metaphor.</p> <p>The patterns and science of imaginary</p>	<p>Convergent response</p>	<p>8c-50</p>

Narrative	Analysis Categories	Code Line Count
<p>numbers was created before their application to electronics. When asked "why <math>\frac{4}{3}</math> in the volume formula for a sphere?" I responded, "I don't think I could explain it in mathematics that you would understand." [Meaning I'd forgotten too much of my calculus.] One of my grade 9's took it as a challenge and solved it easily using an orange, quartered and then thinly sliced to estimate the volume of the quarter. He theorized, and then tested the fact, that the thinner his slice the more accurate his estimate for the volume of the half cylinder formed would be. After three repetitions he noticed that his estimations were approaching <math>\frac{1}{3}</math> of <math>\pi \cdot \text{radius cubed}</math>!</p> <p>Watch Gr. 4's solving the goats and the chickens problem of so many legs and so many heads concretely as opposed to the algebraic solution of a Gr. 10 to see true elegance in a concrete approach.</p> <p>As for large-scale tension: do we instinctively oppose them because we, the classroom teachers, don't have ownership of the device? I look at provincial and international assessments to see how my program priorities might be too far off the 'norm' but I go ballistic when the results are improperly reported on in the media or by the ministry. Eg. The first year we added Gr. 11's to our Junior Highs, one of the schools had 5 kids (mostly ESL students) want to try the English Provincial for Gr. 12's. Their school's name was reported as the worst in English in our province even though they weren't even enrolling Gr. 12's and their sample was only 5 students. Shudder.</p>		
<p>3:18) 08-NOV-2000 10:12 Steve Leinwand (sleinwand)  Brooke - Allow me to elaborate on Fred's response: To me the heart of the matter is continually engaging kids in rich mathematical experiences that help expand their conceptual understanding as well as their number, spatial, data and symbol senses. Building the pyramid - and particularly the followup discussion - may be a concrete experience, but is rich enough to easily expand to the more abstract presentation of the Pascal's triangle. Here</p>	<p>Diagnoses learning needs</p>	<p>3d-35</p>

Narrative	Analysis Categories	Code Line Count
<p>you've started with a great task (given a set of constraints and a situation) and hopefully followed up with instructional activities that BOTH furthered developed understanding AND allowed you to assess (however informally) understanding. To solidify matters, you might then want to ask students (via a more formal assessment) to make a connection between a 5 layer stack of cannon balls and Pascal's triangle and to use this connection to predict a) the number of cannon balls in the 6th and 7th layers, and how many cannon balls are in a 7 layer stack. Note that this is fine for classroom assessment. To do this in large scale, high stakes assessment I believe that I'd have to do all kinds of scaffolding first and take much greater care with how I asked the questions. None of this is essential within the confines of our class. So, to me, it's not so much the issue of who controls and devises, as it is an issue of flexibility and structure. Good tasks are good tasks, but I can risk using so-so tasks in my classroom that I wouldn't dare use on CT's state assessments. Hope this is more food for thought.</p>		
<p>3:19) 08-NOV-2000 17:14 Brooke Bertholet (brooke)  Dear Steve and Fred: I cannot thank you both, enough, for the responses to my inquiry. Fred, you mention the ownership of the device of classroom assessment. The state or local mandatory test, is not frightening as long as it does take into full consideration the diverse population of my students who are each, in their own way, mastering the skills expected. I, as the practioner, am also not frightened by such assessment in terms of what I am supposed to deliver in the classroom and how my students may be expected to perform. Simply, though, I am not a trainer seeing that all my students are able to jump through the same hoops at the same time. I care for the students, as people, as does every teacher, and the classroom assessment also must somehow reflect that personal quality which accounts for our daily interactions as a classroom community of learners. Practical application does extend to the concrete example and, among many, to the</p>	<p>Student talking to student</p>	<p>9t-64</p>

Narrative	Analysis Categories	Code Line Count
<p>metaphorical one as well. Yet, it is us, as people doing the math, together, in which this happens. Your comments, Fred, are direct to the situation as I, so far, perceive it.</p> <p>Steve, you have indeed provided much food for thought. I might have been going the "other way around" with the Pascal's triangle. I wanted my students to pick-up on the number patterns, continue the computation to the final line, to aid in the discovery of the strength of their own higher-order thinking processes (thank goodness, given the great students I've had and do have) they were and are so willing to extend themselves as far as they could, both individually and in groups. Once they had mutually discovered the pattern the application was much harder in terms of a concrete situation. I never could fully display the same ability, say, as would apply to herein one of the hyper-markets, how a pyramid of chocolate flavored mix boxes to be stacked was more, or less, the same in its way. The physical construction has the same mathematical underpinings, but, more importantly has to stay-up in order to be a display to begin with. The flexibility and structure which you mention, Steve, with regard to assessment are, I agree, the most important factors. Yet, it is, as you mention, within the confines of our own individual classrooms. I wouldn't want, though, such flexibility within structure to interfere with the joy of the learning process as it may bend to something very rigid and uncompromising. Not only is the academic future of my students at stake in "high-stake" testing, but there is also the quality of their intellectual and personal lives as they develop into adulthood. Just some reflections here, on the fine ideas contributed by some thoughtful colleagues....who will have me mulling these questions around in my own mind for some time to come. Thanks, once again.</p>		
<p>3:20) 10-NOV-2000 13:17 Amy Puff (amypuff) Great discussion! Michael and Fred both make reference to discovery and movement from concrete to abstract. I remember using base 10 blocks to illustrate basic multiplication. It's easy to show <math>12 \times 3</math> (3 groups of 12) in this way,</p>	<p>Student share experiences and/or solutions</p>	<p>9s-29</p>

Narrative	Analysis Categories	Code Line Count
<p>using visuals to build upon prior knowledge of regrouping. It's exciting when the kids note that use of the algorithm to arrive at a product matches the conceptual demonstration using base 10 blocks. Of course, using base 10 blocks to find the solution to <math>389 \times 462</math> ( 462 groups of 389!) is inefficient, hence the development of the algorithm.</p> <p>With this in mind, I'm curious as to the level of transference that takes place if we extend the Big Mac problem. Kids can use methods other than the standard algorithm to arrive at a solution. And, until I'm convinced that they understand the meaning of a problem, I have come require visual representations with explanation. However, when the numbers are higher, the situation is analagous to what I described with the base 10 blocks: More concrete demonstrations are inefficient. And, at some point, we hope they understand the "kind" of problem, can generalize, and use the division algorithm because they recognize that there is a pattern into which certain problems fit.</p> <p>I guess I'm wondering if it is part of the current instructional framework to use several of the "Big Mac" type problems in a guided way to lead students to find the pattern and replace it with the algorithm... or are various unrelated individual word problems introduced to encourage students toward creative / flexible / critical thinking? Are we still leading them to the algorithm?</p>	<p>Convergent response</p>	<p>8c-9</p>
<p>3:21) 10-NOV-2000 19:28 Fred G. Harwood (fharwood)  What are the 5 main goals of the NCTM Standards, Amy? Are these not part of our instructional framework? I refer to these types of concepts as my meta-curricular ILO's (intended learning outcomes) because they might not appear in the Grade specific ILO's or limiting examples. It is not teaching them what so much as teaching them how to think.</p> <p>The Big Mac example probably would lead to a discussion of charging tax on one burger and then multiplying by the total burgers as</p>	<p>Student questioning another student</p>	<p>9Q-21</p>

Narrative	Analysis Categories	Code Line Count
<p>opposed to calculating the total for all the burgers and then calculating the tax. Why should it make a difference? Which way would McDonald's prefer to do it? If 99 billion burgers were sold at this rate, how much extra would McD get for charging tax on the total and not on each burger. PS. I used \$1.49 for Big Xtras with 7% tax for this to work, I haven't tried it on other values and I certainly haven't converted into US funds from Canadian, sigh.</p>		
<p>3:22) 10-NOV-2000 22:49 Rose Shapiro (rose) When do go into problem solving if your students remain at the visual level in an elementary setting? I agree with the need for real life problem solving, however without the basics we cannot go forward!</p>	<p>Student questioning another student</p>	<p>9Q-5</p>
<p>3:23) 11-NOV-2000 17:40 Craig Morgan (cmorgan) I think I have heard these limiting mind sets before. Gee, they don't know their multiplication facts. They can't do problems solving. Well then, let them use the calculator. To eliminate participation in thinking skills activities because they don't know facts that can be found on a machine, only causes the students to get further behind. How can they see the importance of what they need to learn if they you don't expose them to situations where the knowledge is needed. In this case, it isn't the student that has the real problem. Craig Morgan</p>	<p>Divergent response</p>	<p>9d-13</p>
<p>3:24) 15-NOV-2000 02:48 Christine Palmer (cmpalmer) Even when the curriculum is dealing with basic skills, we can still focus our students' attention on the usefulness of what they are learning. For example, I would hope that all of us in the U.S. are taking advantage of the election night projection failures in our statistics classes.  Another example, I recently taught a lesson about eliminating possibilities. "Before" I would have explained what it meant to eliminate possibilities, and when asked why, I would have said, "because it helps make the problem</p>	<p>Student share experiences and/or solutions</p>	<p>9s-25</p>



Narrative	Analysis Categories	Code Line Count
<p>trip to an away game, they wrote the tables up in rap and the kid knew them all.</p> <p>You can take a basketball basics video that shows a basic layup of touching the ball to the backboard above the basic and releasing it but my Gr. 8 girls will be frustrated because of their physical inability to jump 11 plus feet. We must teach alternate ways if we expect all students to master each concept.</p> <p>PS. Isn't seven eights equal to <math>7/8</math> in the later grades and a negative plus a negative is always a positive!</p>	<p>Student questioning another student</p>	<p>9Q-3</p>

<b>Accepts, Clarifies, student feelings</b>	<b>1-24</b>
<b>Acknowledges student ideas</b>	<b>3a-21</b>
<b>Convergent response</b>	<b>8c-73</b>
<b>Designs pattern of learning experiences</b>	<b>3D.-52</b>
<b>Diagnoses learning needs</b>	<b>3d-35</b>
<b>Divergent response</b>	<b>9d-29</b>
<b>Evaluative response</b>	<b>9e-32</b>
<b>Factual response</b>	<b>8f-6</b>
<b>Praises and Encourages</b>	<b>2-15</b>
<b>Student questioning another student</b>	<b>9Q-61</b>
<b>Student share experiences and/or solutions</b>	<b>9s-136</b>
<b>Student talking to student</b>	<b>9t-99</b>



Narrative	Analysis Categories	Code Line Count
<p>Given a situation:            Can you describe or represent it?            Is it fair? A rip-off? Contradictory?            Can you make a prediction, resolve a misconception, or offer an explanation?</p>	<p>Asks convergent questions</p>	<p>4c-5</p>
<p>4:2) 02-NOV-2000 09:42 Susan A. Stuart (sues)            I am going to try out these questions with my pre-service teachers. They have experienced many open-ended tasks and are just beginning to write their own. I really think these questions will be helpful to them.</p>	<p>Convergent response</p>	<p>8c-5</p>
<p>4:3) 02-NOV-2000 13:14 Wilhelmina "Billie" Mazza (billiemscd)            I especially like your first two questions:             Is this mathematics still important?            If yes, when and where do normal human beings use this mathematics?             I suspect we should all use them in more than just creating assessment items!</p>	<p>Convergent response             Evaluative response             Convergent response</p>	<p>8c-1             9e-3             8c-2</p>
<p>4:4) 03-NOV-2000 09:12 Michael E Matthews (hamath)            I agree about is the math important?            But, how do we know? I have been running across this dilemma because I have been trying to change the way I teach toward task building activities. I got stuck on exponents. My unit teaches exponents and roots. But it also teaches negative exponents(I had no clue how to make this real) and fractional exponents. However, maybe in engineering fields, they use negative exponents. What do I do here? Drop it? Search and if so where?</p>	<p>Convergent response            Evaluative response</p>	<p>8c-1            9e-10</p>
<p>4:5) 03-NOV-2000 11:05 Fred G. Harwood (fharwood)            Michael, how about showing the number line with place values determined by base 10 (or other bases) extending into the decimal fractions? Forensics are hot and many formulas involve these exponents but I'm going</p>	<p>Student questioning another student</p>	<p>9Q-9</p>

Narrative	Analysis Categories	Code Line Count
<p>to have to run to class now. I'll try to find some for you later if I get a break. See my post on the previous section on sequence/series work as an example.</p>		
<p>4:6) 03-NOV-2000 14:10 Luke Dowell (ldowell)  Michael, I'm not sure everything we teach in math has to be grounded in what normal human beings use. There are still some topics that I think need to be taught not because of its use in the "real world" but because of the mathematical connections between that topic and others. My goal is to teach students to understand math and be able to apply math to real life situations. Part of that understanding is building connections between concepts. If we leave out topics that don't have obvious real life applications, I think we leave some holes in the students' understanding of math. I think it is still necessary to use other assessments (like quizzes) in situations where authentic assessments may be harder to develop. I think this would also help students see that they will be expected to show their understanding of concepts in a variety of ways.</p>	<p>Student talking to student</p>	<p>9t-19</p>
<p>4:7) 04-NOV-2000 16:41 Steve Leinwand (sleinwand)  Great question - How do we know if it's still important? Here's how I make the determination:</p> <p>First I ask whether or not I care if my own children know it. One of the reasons we took two digit divisor long division with paper and pencil off of CT state tests is that I really no longer cared whether my own children had the capability to do it. So in the case of simplifying radicals or rational expressions or trig identities or GCF and LCM - I think a good case can be made that this is no longer important.</p> <p>Then, to confirm my own opinions, I turn to a colleague. If the two of you cannot convince yourself it needs to be taught - maybe it shouldn't be.</p> <p>Finally, do it publically -that is share your "skip" decisions with your colleagues so that they can</p>	<p>Accepts, clarifies student feelings</p> <p>Diagnoses learning needs</p> <p>Motivational lecturing</p>	<p>1-3</p> <p>3d-9</p> <p>5M-10</p>

Narrative	Analysis Categories	Code Line Count
adjust. In many cases, it's far better to learn something later when it actually has to be used than prematurely simply get kids ready ahead of time.		
4:8) 04-NOV-2000 16:44 Steve Leinwand (sleinwand) As for the issue Luke raises - Can everything be linked to the real world? Of course not - but a lot of math can be and should be. I agree that just because something does not have a real world application it shouldn't be omitted, but let's recognize that such topics are much harder to teach and convince kids of their importance, again arguing for context and application whenever possible.	Clarifies student ideas	3c-9
4:9) 04-NOV-2000 21:40 Michael E Matthews (hamath) Steve and others in response to 4:7 above, I have a problem with turning to a colleague. I have none. I teach in rural Nevada, in a school where I am the only certified math teacher(one of the teachers assigned to teach a general math course can barely multiply!!). My school is for court placed youth and they will not be going to other teachers in the same district but across the nation. Now I realize I cannot prepare them all, but any ideas on where I should turn to make "skip" decisions? The NCTM standards? A math teacher email group? any other ideas?	Divergent response	9d-13
4:10) 04-NOV-2000 22:09 Fred G. Harwood (fharwood) In BC, (our Canadian state equivalent), our math specialist association (BCAMT) developed a provincial listserve where 355ish of the teachers in the province bounce ideas, ask questions, seek resources etc. The rural teachers swear by it. I've also passed on the value of this type of conference to reduce Pro-D costs, especially for the outlying areas. The vast majority of our population exists in the lower mainland around Vancouver and on nearby Vancouver Island which means the majority of Pro-D opportunities are had here and not the outlying areas. An initiative has	Convergent response	8c-16

Narrative	Analysis Categories	Code Line Count
<p>been made to have a regional conference in the middle of the province but a listserve would help far more for those day by day questions.</p>		
<p>4:11) 05-NOV-2000 18:34 Steve Leinwand (sleinwand) Michael - You answered your own question - Yes, the NCTM standards and yes any e-mail group you can get attached to. But since you are the one who teaches all the math - you can experiment and see what of importance - if anything - your students cannot do a year or two later because you skipped it. My bet, is that judicious and common sense decision-making will result in very little of import being skipped.</p>	<p>Acknowledges student ideas</p>	<p>3a-10</p>
<p>4:12) 07-NOV-2000 16:19 Anna Maria Licameli (alicameli) I'm not hearing anybody talk about topics that ought to be studied on the basis of being mathematically beautiful. If we make our math courses entirely pragmatic, we will have no future mathematicians! Some of my most satisfying lessons have involved the Fibonacci numbers and their expression in the shape of a Nautilus shell, Pascal's triangle and its patterns, drawings of the Sierpinski Sieve... Kids get into that stuff without asking what it's for. The key is that it's actually interesting. Math class doesn't have to be about something they encounter every day to get them to do it. I think it's important to capture their imaginations, and the "real world" can be pretty dry in that regard.</p>	<p>Divergent response</p>	<p>9d-16</p>
<p>4:14) 07-NOV-2000 17:02 Fred G. Harwood (fharwood) I love to work with repeating decimal strings and prime (and composite) denominators because of the overlying beauty of the many different patterns bound by grand, transcending principles. They can also be used to teach that a strong mathematical knowledge can be used to extend the use of tools (like a calculator to hundreds of decimal places) or that your mind can out perform a calculator. It also provides many opportunities for estimating and is</p>	<p>Student share experiences and/or solutions</p>	<p>9s-14</p>

Narrative	Analysis Categories	Code Line Count
<p>extremely open-ended (lots of room for new discoveries). We do have to keep a focus on getting them to be "mathematicians", not just engineers/scientists/carpenters/et al.</p> <p>Now, how do we assess these "mathematical" attitudes with the aptitudes? So far, I am only successful with anecdotal evidence, and their self-evaluations on their work habits where I have included the attitudes and behaviours of successful mathematicians and have them compare their habits to them. I have a set of criteria in four categories for them to assess their strengths and weaknesses and then to later combine the 4 areas into a Work Habit grade (and to write out specific goals for the next part of the course). I conference with any student that I think has been unduly harsh or lenient with themselves. I'd love to hear how others are approaching this affective and generally more intangible areas?</p>	Evaluative response	9e-16
<p>4:15) 08-NOV-2000 10:18 Steve Leinwand (sleinwand)</p> <p>There is no question that the beauty of mathematics and the awe with which we approach things like patterns and Pascal and Sierpinski must be part of our instructional programs. I just think we need to remember that while this is an incredible turn-on for many of us and for some of our students, for many of our students, we need a different - more practical - entree to mathematics first. For these students, the patterns that emerge from something as prosaic as the Pizza Hut menu for pizza and toppings is how we entice them to the world of Pascal and Sierpinski etc. It is also my experience that when it come to assessment, the context is critical for inviting students to engage in a task, while more pure mathematical contexts leave many very alienated.</p>	Accepts, clarifies student feelings	1-18
<p>4:16) 08-NOV-2000 12:37 Brian Simone (colsanders)</p> <p>I regret the fact that math is taught only as a problem solving tool. Math is so much more. Some of the most enjoyable aspects of math are the ones that have no application. I have</p>	Student share experiences and/or solutions	9s-7



Narrative	Analysis Categories	Code Line Count
<p>often have to work with very small numbers, such as <math>1/1,000,000</math>, and it is easier to write 10 to the -6 power. 10 to the -6 power is also easier to work with than <math>1/1,000,000</math>. Negative exponents obey all the laws that you learn for positive exponents, so you don't have to learn a whole new set of laws. To multiply <math>x</math> to the 3 times <math>x</math> to the 2, you add the exponents, because <math>xxx</math> times <math>xx</math> equals <math>xxxxx</math>. Similarly, <math>1/1,000,000</math> times <math>10,000,000</math> equals 10. To multiply 10 to the -6 times 10 to the 7, you add the exponents, and get 10 to the 1. Similarly, it is often easier to write square roots as <math>1/2</math> powers. When we do that, we can use all of the laws of exponents to work with roots, and it makes the job easier.</p> <p>Is math good for anything? Math is the most reliable information in the world. And the method of thinking that leads to mathematics is the most reliable method of thinking in the world. It is just about the only thing that is accepted by everyone, in every time and place, everywhere in the world. So, if you want to go through life believing nonsense and just doing what you're told, you don't need math. But if you want to be able to solve problems and understand the truth, then math is the subject for you.</p>	<p>Evaluative response</p>	<p>9e-12</p>
<p>4:19) 15-NOV-2000 02:14 Christine Palmer (cmpalmer) Glad someone finally got around to science, and the use of negative exponents, because scientists use scientific notation when working with very small numbers, to make the calculations easier to do.</p> <p>Michael, I suggest two alternatives for email colleagues. The first is that I "talk" to a group of about a dozen (we've been as high as thirty, but apparently there is a high turn-over in education) middle school math teachers. If you drop me an email, I would be happy to put you in touch with the "list-holder", so that you can join our conversations. I also participate with the AAMT (Australian Association of Mathematics Teachers) List-serv. I find this to be extremely worthwhile for both practical and philosophical direction, even if I am just</p>	<p>Initiated comment</p> <p>Student questioning another student</p>	<p>9i-5</p> <p>9Q-16</p>

Narrative	Analysis Categories	Code Line Count
"listening" to the discussions. The AAMT will probably surface on any search engine, but get in touch with me, if you have trouble finding it and I'll send you a link.		

<b>Accepts, clarifies student feelings</b>	<b>1-21</b>
<b>Acknowledges student ideas</b>	<b>3a-10</b>
<b>Asks convergent questions</b>	<b>4c-10</b>
<b>Asks factual questions</b>	<b>4f-7</b>
<b>Clarifies student ideas</b>	<b>3c-9</b>
<b>Convergent response</b>	<b>8c-25</b>
<b>Diagnoses learning needs</b>	<b>3d-9</b>
<b>Divergent response</b>	<b>9d-29</b>
<b>Evaluative response</b>	<b>9e-41</b>
<b>Formulates directions for learning</b>	<b>3f-2</b>
<b>Initiated comment</b>	<b>9i-18</b>
<b>Motivational lecturing</b>	<b>5M-10</b>
<b>Orientation lecturing</b>	<b>5O-9</b>
<b>Student questioning another student</b>	<b>9Q-29</b>
<b>Student share experiences and/or solutions</b>	<b>9s-56</b>
<b>Student talking to student</b>	<b>9t-19</b>



Narrative	Analysis Categories	Code Line Count
<p>5:3) 01-NOV-2000 10:42 Craig Morgan (cmorgan)  Paula, If you have a learning disabled student, you should be making up a rubric that they would see even before they completed the task so they would know what is expected of them. To give them the rubric and discuss it with them after the fact is not helping them at all.</p> <p>Rubrics can and have been constructed for all grade levels. It's simply a list (in its purest form) of what they need to achieve for each level. To use it as a &lt;gotja&gt;(giving them a grade using the rubric without telling them how to achieve) is something to many teachers use to verify that the students don't know anything. A &lt;gotja&gt; is not a way to motivate students and make them work harder. It's a lazy way of teaching.</p>	<p>Student questioning another student</p> <p>Student talking to student</p>	<p>9Q-6</p> <p>9t-10</p>
<p>5:4) 01-NOV-2000 16:55 Steve Leinwand (sleinwand)  Paula (and Craig) - More important than the rubric - whether regular ed or special education student - are samples of student work. To be, the most important piece of the assessment puzzle early in the year is to inculcate students with expectations for completeness, clarity, comprehensiveness, etc. Taking a task and sharing student work - perhaps from a prior class - that shows explicitly what constitutes a 1, a 2, a 3 and a 4 is critically important. To me, this is the clearest and fairest way to communicate expectations.</p> <p>Now for learning disabled students, it obviously depends upon the degree of disability how far you scoring might deviate from the "norm."</p>	<p>Evaluates results: re-diagnose needs</p>	<p>3e-15</p>
<p>5:5) 02-NOV-2000 16:29 Carole Bilyk (cbilyk)  Steve, I agree that student samples are important. How do you ever start using these types of tasks though if you have to have student samples ahead of time? The teachers I work with often ask me this question. Is it enough to start with a task and show the students the rubric? Should you start with a</p>	<p>Convergent response</p>	<p>9c-13</p>

Narrative	Analysis Categories	Code Line Count
<p>task, the rubric, and then during the process allow the students to critique others work to improve their own? What is the best way to start this process in your classroom? Any answers to this question would be greatly appreciated.</p>		
<p>5:6) 02-NOV-2000 17:43 Steve Leinwand (sleinwand) Carole - Of course it is fine to start with a task and explore student work with the class and use it to jump start the process. One of the nice things about haing several midlle school or high school classes is that you can use the work from one class to help calibrate another class and vice versa.</p>	<p>Accepts, clarifies student feelings</p>	<p>1-7</p>
<p>5:7) 03-NOV-2000 20:21 Fred G. Harwood (fharwood) Anchor papers have some great spin offs in open-ended assignments.</p> <p>I'm in the fourth year of authentic assessments for my Gr. 11's in the transformation of functions (&amp; circles and ellipses) unit. The objective is to know how different functions can be graphed and vice versus, what the equation would be for a certain graph. Rather than a paper and pencil test, I had them graph a picture using at least 10 equations, of at least 3 different types of functions (or circles etc.) I had no student samples the first year so I created "Ralphy, Rudolf's intoxicated brother" - a stick figure reindeer and talked about how it would fit the criteria and where it could be improved for a better score. The students blew me away with their artistry (confirming why I was given a standing-granted in Art 7 and counselled to take academic/technical courses :-))One girl used 144 equations to draw a cathedral and then decided she didn't think it adequate enough so used 125 more to create Lucille Ball. After the first year I had enough samples to reduce Ralphy's exposure to the general public. I built a slide show portraying a sequence of student examples and several new students then figured out that this process could be used to animate their projects!</p>	<p>Evaluative response</p> <p>Student share experiences and/or solutions</p>	<p>9e-2</p> <p>9s-34</p>

Narrative	Analysis Categories	Code Line Count
<p>I have never before had students spending an average of 4-8 hours doing a 'math test' and enjoying it. Students responded with, "It was a lot of work but I'd do it again. And I really understand domain and range now!" Some borderline/failing students came in for extra help and afterwards took their project/test to show the principal!</p> <p>I also have wisely chosen to expand this type of assessment to other grades (eg. linear equations for grade 9/10) and have used the concept to create several nice constructivist lessons where I start them off with a picture and some of the equations that generated them and have their coop groups try to uncover the missing equations and then improve the picture to make it open-ended. One student spent 3 hours to use 65 parabolas (instead of the 10 I'd used) to have his TI draw Einstein. "Why'd you work so hard on a one-night assignment?" I asked implying this effort was inconsistent. He fired back, "Because it was fun!" implying other of my homework assignments weren't.</p> <p>If people are interested in how a TI can control the domains of a graphed function let me know. It is a useful process and made students want to learn domain and range without being asked to.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-21</p>
<p>5:8) 04-NOV-2000 10:41 berg martha (kmek) I have been working with elementary students in designing rubrics; I give the kids samples of student work (which I will 'make up' and pretend they are actually from students if I don't have any) and ask them to identify which of the responses they feel are particularly good. We then list the qualities they identify as 'good work'. Over time, we are creating a student generated rubric and the kids have a deeper understanding and acceptance cause they created it. When they do a written response, they then practice using the rubric, and they can also use the rubric for goal setting so they know what they need to work on to make their writing better.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-15</p>
<p>5:9) 04-NOV-2000 13:15 Jeanine Brizendine</p>		

Narrative	Analysis Categories	Code Line Count
<p>(eteacher)            In addition to berg martha's (kmeK) reponse, we do have the students critique their peers (three selected fictious students' samples) and they determine what the criterion is for a top score of 3, then the 2, and finally the 1. The samples serve as benchmarks to determine what the expectations are.</p> <p>Guidelines for discussion maybe as follows:</p> <p>Rubric            3 mathematical communication is clear                purpose of the question is achieved            2 mathematical communication is partially correct                purpose of the question is partially achieved            1 mathematical communication is not clear                purpose of the question is not achieved</p>	<p>Student share experiences and/or solutions</p>	<p>9s-14</p>
<p>5:10) 04-NOV-2000 16:56 Steve Leinwand (sleinwand)            The key idea with respect to scoring student work is to relax and recognize that there is inevitably some subjectivity in this process. But I think we all recognize the deficiencies in the system of 73 vs 84 - particularly when the student with the 73 got the two most difficult problems correct and made careless errors on the simple one, while the student with the 84 hadn't a clue on the two difficult (summary) problems. Unfortunately, most of the technology for scoring open-ended tasks is drawn from state's wrestling with scoring items on large-scale assessments where validity and reliability are major concerns. This is NOT the case in our classrooms where we have much more wiggle room and where reliability and validity just aren't critical. If we are reasonably fair and reasonably consistent and provide for an appeal process, we're in good shape.</p>	<p>Clarifies students ideas</p>	<p>3c-19</p>
<p>5:11) 04-NOV-2000 22:14 Fred G. Harwood (fharwood)            Not critical but must be defensible. This is why I hate the first interim report and reporting period. I'm never happy that enough information has been derived since so much of my energies are focussed on building</p>	<p>Initiated comment</p>	<p>9i-8</p>



Narrative	Analysis Categories	Code Line Count
<p>5:14) 06-NOV-2000 07:49 Steve Crandall (scrandall)  Hello, Fred! I have tried to give partial credit to correct parts of the longer and more complex solutions to problems. This is also similar to the scoring for our high-stakes testing "short response" and "extended response" items. I was just wondering about those with lower abilities who jump right in on the most difficult problems to get those big returns and to feel the power of solving big problems. Unless the nuts and bolts multiple choice and gridded response items get taken care of in a most accurate manner, the icing is on a pretty thin cake.</p> <p>I am thinking about the review testing for achievement of units or larger blocks of material. Yours, Steve</p>	Student talking to student	9t-16
<p>5:15) 06-NOV-2000 09:49 Fred G. Harwood (fharwood)  I'm now using some authentic tasks to replace several of my unit paper/pencil tests.</p>	Convergent response	8c-2
<p>5:16) 06-NOV-2000 22:02 Brennan Glasgow (brennan)  There is a great resource for teaching students to communicate their responses well and to see other responses. It is a web site called The Math Forum. One of my favorite features is the Problem of the Week. Students from all over the world solve these problems and post their solutions. This allows the students to see many different ways to solve the same problem. A real emphasis is placed on communicating your solution clearly and completely. They recently added a new article called, "Tips for Writing Solutions." It can be accessed at:  <a href="http://www.mathforum.com/elempow/writing.html">http://www.mathforum.com/elempow/writing.html</a></p>	Student share experiences and/or solutions	9s-13
<p>5:17) 07-NOV-2000 03:54 Rosemary Callingham (rcalling)  I'm writing from Australia where the kinds of</p>	Student talking to student	9t-6

Narrative	Analysis Categories	Code Line Count
<p>tasks you are talking about are usually termed "rich" tasks. We have different ways of scoring these - some people use the holistic kinds of rubrics you are talking about. Others are more analytical.</p> <p>One way of designing rubrics if you don't have work samples handy is to think about coding the quality of response. This can be done at the time you are designing the task. Firstly think about the underpinning mathematics and then try to anticipate responses. This is an example from an early childhood classroom:</p> <p>Give the children a sheet with the outline of a T shirt and the instruction Make a pattern on this T shirt.</p> <p>The underpinning ideas are those of pattern so I'd be looking for repetition, more than one element, symmetry and consistency. What qualities would a class of 5 year olds demonstrate?</p> <p>Some will show no understanding of the task at all - just scribble or maybe colouring in the jumper in one colour.</p> <p>A second group may show some understanding and include different elements but the pattern drawn does not repeat eg stripes on one part and spots on another with random placement of the elements.</p> <p>A third group will recognize the ideas of repetition but still be inconsistent eg stripes but irregular ones or different colours on each sleeve</p> <p>Others will produce a pattern that repeats and has symmetry.</p> <p>All of these groups can be identified even if their motor skills are not good enough to produce a really neat product. These can be coded as 0, 1, 2 and 3 respectively.</p> <p>This kind of task is open ended and allows all children to have-a-go at their own level. A different kind of pattern task such as creating a repeating linear pattern or continuing a pattern</p>	<p>Student share experiences and/or solutions</p>	<p>9s-48</p>

Narrative	Analysis Categories	Code Line Count
<p>may get quite different responses from the same child which may give the teacher some insights into not only the child's understanding of pattern but also in what kinds of contexts this is demonstrated.</p> <p>I'd be interested in your responses to using this kind of assessment with young children. I have used it very successfully with middle schoolers. Cheers, Rosemary</p>		
<p>5:18) 07-NOV-2000 10:11 Steve Leinwand (sleinwand) Rosemary is entirely correct - some form of analytic scoring is a viable alternative to holistic scoring. While my preference is to keep this reasonably simple with the 4-point holistic score PLUS COMMENTS, lots of teachers feel very comfortable with identifying the three or four key mathematical or non-mathematical elements of good work and assigning points - often 0, 1 or 2 - for the quality of evidence of each element. This approach can provide much more specific feedback to both students and to teachers about which elements are strong and which elements need work. thanks for your contribution.</p>	Clarifies student ideas	3c-14
<p>5:19) 07-NOV-2000 22:28 Jeanne Shimizu (jeanne) I thought I'd share a source of student work which was very helpful to me when I first began using holistic scoring with my students and later when I was asked to give staff development workshops.</p> <p>California has a program known as the "Golden State Exam" which offers exams in Algebra 1, Geometry, and High School Math. The Algebra 1 and Geometry are end of course exams. The High School Math is open to students who are enrolled in or have completed Algebra 2.</p> <p>To get a score point of 4, a student thoroughly accomplishes the task.</p> <p>To get a score point of 3, a student substantially accomplishes the task.</p>	Student share experiences and/or solutions	9s-28

Narrative	Analysis Categories	Code Line Count
<p>To get a score point of 2, a student partially accomplishes the task.</p> <p>To get a score point of 1, a student makes little or no progress towards accomplishing the task.</p> <p>A Teacher's Guide is available online which contains a released problem for each test and sample student responses for score points, 4 and 3. Each student response has commentary which identifies the qualities of the paper that makes it a 3 or a 4.  <a href="http://www.cde.ca.gov/statetests/gse/GSEMathGuide2001.pdf">http://www.cde.ca.gov/statetests/gse/GSEMathGuide2001.pdf</a></p>		
<p>5:20) 09-NOV-2000 09:40 Rick Norwood (rnrwood)  I always try to put a little history and a little poetry into every math class I teach. I hope the people who teach history and poetry put a little math into their classes. I hope the historians teach about Isaac Newton as well as Atilla the Hun, and the poets mention that Omar Khayam was a mathematician as well as a poet.</p> <p>5:21) 15-NOV-2000 12:14 Cheryl Cousin (ccousin)  I love using rubrics. Not only do I use them for grading purposes, but I use them to set goals for myself and for the students. My students survey people and complet a circle graph on their favorite ice creams. The rubric categories were Calculations, Mesuring Degrees, Overall Appearance, and Survey. The grading was on a scale of 3 to 1. For example: in the Survey category, the students received a 3 if they put extended effort into surveying more than 20 people, a 2 for surveying 20 people, and a 1 for surveying less than 20 people. My students knew before they began what was expected of them. A rubric at the beginning of a project works wonders.</p>	<p>Student share experiences and/or solutions</p> <p>Student share experiences and/or solutions</p>	<p>9s-7</p> <p>9s-15</p>
<p>5:22) 16-NOV-2000 23:49 Leslie E.J. Nielsen (lejnielsen)  Rubrics are great, but I run into a problem with my students who are very concerned with their</p>	<p>Student share experiences and/or solutions</p>	<p>9s-7</p>

Narrative	Analysis Categories	Code Line Count
<p>grades. Their concern is that a 3 meets standard (in the State of Washington) but a 3 out of 4 in a grade calculation is a C!! Does anyone have suggestions of how to reconcile the two systems?</p>		
<p>5:23) 17-NOV-2000 00:23 Fred G. Harwood (fharwood)            How is a 3/4 a C? I take my range of 1's, 2's, 3's and 4's and some get weighted if they are more major concepts and then give a general percentage for the set gathered for a report: eg 100, 95, 90, . . . There are no 83's or 62's. It really depends on the outcomes that you are assessing. Are you giving feedback to the student for improving learning? They need to know where to go next, what to shore up and to celebrate success.</p> <p>I could use them for aspects of work habits, cooperative behaviours, certain skill sets and more. But they are all used to expose a variety of ideas.</p>	<p>Student questioning another student</p>	<p>9Q-14</p>

Accepts, clarifies student feelings	1-7
Clarifies student ideas	3c-33
Convergent response	8c-38
Evaluates results: re-diagnose needs	3E-15
Evaluative response	9e-2
Factual lecturing	5f-14
Initiated comment	9i-8
Personal lecturing	5P-7
Student questioning another student	9Q-20
Student share experiences and/or solutions	9s-213
Student talking to student	9t-38

**Workshop 2**

**Table # 90: Workshop 2, Item 6, Exemplar Tasks for Exploration and Use**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 2 Item 6 Mathweb 2000 Center, Workshop 2, Item 6, Resp 23</p> <p>Exemplar Tasks for Exploration and Use</p> <p>Item 6 30-OCT-2000 22:31 Susan Doherty (squinnxx) Exemplar Tasks for Exploration and Use</p> <p>6:1) 30-OCT-2000 22:32 Steve Leinwand (sleinwand) The Budget Mystery</p> <p>In 1990, the maintenance budget for a school was \$30,000 out of a total budget of \$500,000. In 1991, the figure was \$31,200 out of a total budget of \$520,000. Inflation between 1990 and 1991 was 8%.</p> <p>Parents complain that the money spent on maintenance increased. The maintenance manager for the school complains that the money for maintenance has decreased. The principal maintains that, in fact, there has been no change in spending patterns at the school.</p> <p>Is it possible that everyone's opinion could be valid? Write a paragraph describing how each party might justify his or her claim.</p>	<p>Factual lecturing</p> <p>Factual lecturing</p> <p>Asks factual questions</p>	<p>5f-5</p> <p>5f-6</p> <p>4f-3</p>
<p>6:2) 30-OCT-2000 22:33 Steve Leinwand (sleinwand) Waiting for the Ferry</p> <p>You are waiting for the ferry to Fingerhut Island. Ahead of you in line are a tour bus, a school bus, two cars with trailers, ten other cars, and four motorcycles. The ferryboat arrives fully loaded, at 9 a.m. Ten automobiles are onboard. The roundtrip ferry schedule allows 40 minutes including loading and unloading.</p> <p>Predict when you will arrive on Fingerhut Island. Explain your reasoning.</p>	<p>Motivational lecturing</p> <p>Asks factual questions</p>	<p>5M-8</p> <p>4f-2</p>
<p>6:3) 30-OCT-2000 22:34 Steve Leinwand</p>		



Narrative	Analysis Categories	Code Line Count
<p>this one. He's completely burned from head to toe!"</p> <p>Then you hear another nurse say: "Not a problem, just order up 1000 square inches of skin from the skin graft bank and everything will be fine."</p> <p>You do come quick calculating and could respond:  " Oh good, that sounds about right. This must be a fine hospital." OR  " Oh my, that doesn't sound right at all. That patient is going to be in deep trouble."</p> <p>Which response, a. or b., do you think is most appropriate? Justify your thinking mathematically.</p> <p>If you were the patient completely burned, how much skin would you hope they ordered up for you?  Explain how you arrived at your estimate for how much skin you believe you have on you body.</p>	<p>Asks convergent questions</p> <p>Asks convergent questions</p>	<p>4c-3</p> <p>4c-6</p>
<p>6:6) 30-OCT-2000 22:40 Steve Leinwand (sleinwand)  Big Foot Pizzas</p> <p>Several years ago, Pizza Hut announced plans to market a Big Foot pizza to compete with Little Caesar's two pizza offering. Pizza Hut claimed that their 2 foot by 1 foot Big Foot pizza was 25% larger than two 12-inch in diameter round pizzas.</p> <p>Was this claim accurate?</p> <p>How much more pizza do you get from the Big Foot than the two Little Caesar's round pies?  If the Big Foot is to sell for \$9.99 and the Little Caesar's two round pizzas sell for \$7.49, which is the better deal?</p> <p>A key decision that Pizza Hut needed to make was how many slices to slice the Big Foot pizza into and how to slice it (for example, three rows of 6 slices). Propose to Pizza Hut how you believe they should slice the Big Foot</p>	<p>Factual lecturing</p>	<p>5f-21</p>

Narrative	Analysis Categories	Code Line Count
and justify your recommendation in terms of the number of slices and the size of each slice.		
<p>6:7) 30-OCT-2000 22:41 Steve Leinwand (sleinwand) Pancake Consumption</p> <p>The World Record for Pancake Consumption (according to the Guinness Book of World Records) is held by Peter Dowdeswell of London, England.</p> <p>Dowdeswell consumed 62 six inch and diameter, 3/8 thick pancakes with butter and syrup in 6 minutes, 58.5 seconds. About how high a stack of pancakes did he consume?</p> <p>Calculate his consumption rate in pancakes per second and draw a picture of the amount of pancake he consume each second. Calculate the volume of the pancakes he consumed.</p> <p>Explain how a man with a stomach only about 125 cubic inches in volume could have devoured the amount of pancakes Peter Dowdeswell did when he set the record. Draw a graph that you believe shows Dowdeswell's rate of consumption from 0 to 62 pancakes and from 0 to 7 minutes. Explain why you constructed your graph as you did.</p>	Factual lecturing	5f-22
<p>6:8) 30-OCT-2000 22:42 Steve Leinwand (sleinwand) Pizza Order Bid</p> <p>Using any Pizza Hut take out menu and price list (including all relevant coupons), consider the following situation:</p> <p>A high school class estimates that it will need about 100 slices of pizza for a class pizza party. About half the class wants plain cheese pizza and the other half wants pepperoni. In order to get the most for their money, the class decides to get price bids from several pizza stores.</p>	Factual lecturing	5f-23

Narrative	Analysis Categories	Code Line Count
<p>You are the manager of the local Pizza Hut and need to submit a bid (a cost proposal) to supply the pizza for the class party.</p> <p>Your task is to use the price list and coupons to submit a reasonable bid for supplying the pizza. Be sure to identify the final cost, show the mathematics you used, and explain exactly how you arrived at this cost. Remember, you are trying to submit the lowest, but still accurate and reasonable bid.</p>		
<p>6:9) 02-NOV-2000 16:32 Carole Bilyk (cbilyk)  These questions all sound interesting and I'm going to try to sketch some possible answers for myself. However, most of the questions seemed to be geared to early and middle years mathematics. Does anyone have ideas for Senior Years (9-12) or any resources where one could get ideas?</p> <p>For any level, how does one go about creating this kind of task? The workshop gave some ideas, but are there others?</p>	Evaluative response	9e-10
<p>6:10) 02-NOV-2000 17:40 Steve Leinwand (sleinwand)  Carole - Some of the best tasks I know are available in the Balanced Assessment books from Dale Seymour. In fact, there are 4 volumes of tasks for high school. You might start there.</p>	Acknowledges student ideas	3a-5
<p>6:11) 03-NOV-2000 20:23 Fred G. Harwood (fharwood)  We could also generate some of our own for specific topics/grade levels. Do a search for "Bounce" that I posted to another part of the conference as an example. I'm always looking for good examples myself.</p> <p>An other thing would be to post a starter question and have us edit it for improvements and extensions. This would be valuable (and fun!)</p>	Convergent response	8c-9
<p>6:12) 04-NOV-2000 16:49 Steve Leinwand</p>		

Narrative	Analysis Categories	Code Line Count
<p>(sleinwand) Fred - One of the ways I help people begin to develop tasks is to start with the Pancake record task above and then present another world record - like the largest cookie or largest noodle and simply ask: what could you ask your students based on the data in this world record that would help develop or reinforce aspects of the mathematics curriculum you are responsible for teaching this year. It's amazing the variety of ideas that arise when ten or so people start sharing their problems/tasks.</p>	Gives or asks for resources	5R-11
<p>6:13) 04-NOV-2000 22:33 Fred G. Harwood (fharwood) Shall we play this game? :-)</p> <p>You are in charge of providing the seating arrangements for a newly converted warehouse into a theatre. In front of the stage is a 24m opening that expands gradually out to 60m at the rear of the space.</p> <p>How will you arrange your seating and what is the total seating capacity for the theatre? You may admire the sloping floor that has been installed to provide better viewing for the seats to the rear.</p>	Convergent response	8c-11
<p>6:14) 05-NOV-2000 05:59 Daniel Lemay (lemayd) Steve, I like the pancake problem. One thing I am constantly trying to decide on is how much scaffolding to providing in a task. As written, are the questions leading a student through a process?</p>	Initiated comment	9i-5
<p>6:15) 05-NOV-2000 10:24 Fred G. Harwood (fharwood) Theatre Question: I would expect students to ask about the depth of the theatre and then I'd say, "Good point, what do you think would be appropriate?" and get other students to discuss the merits of their choice. This would be an opportunity for doing discrete math and having them think about optimal solutions. or "Good point, what could we do to decide what would be a reasonable depth? What factors</p>	Evaluative response	9e-14

Narrative	Analysis Categories	Code Line Count
<p>should we consider?" This provides an opportunity to discuss a problem solving heuristic like 'physical model' to get them building sample rows with classroom chairs and measuring.</p>		
<p>6:16) 05-NOV-2000 18:42 Steve Leinwand (sleinwand)            Dan - Regarding scaffolding - you raise a critical issue and one that has no simple answer. I believe in more scaffolding early in the year than later in the year. I believe in more scaffolding on test items and on classroom tasks. And I believe that at any time, we are probably providing some students too much and some students too little. As for Pancakes - I'm just trying to milk a world record (an engaging context) for a range of mathematics. Since it is not a particularly rich task I didn't worry about whether or not I was leading students since I knew what questions I wanted answered. Skin in the game on the other hand is far richer and much less leading I think.</p>	<p>Diagnoses learning needs</p>	<p>3d-16</p>
<p>6:17) 05-NOV-2000 18:43 Fred G. Harwood (fharwood)            Daniel, I feel it is our role, as guide-on-the-side, to monitor the process to see if their scaffolds are adequate for the task. Remember, in a class of 25 plus kids, there is someone(s) who already know what to do if they can communicate to each other. When our questions are too polished, (and most definitely our solutions), the students won't see or really be processing information and solving problems the way we want them to in the 'real' world. A good example of this came this morning when a church member asked me for help tomorrow with figuring out how to pleat a kilt so the patterns align properly according to the Scottish tradition. And can you believe it, I've never done this exercise before! I'm just imagining some of the great fraction and measurement problems we'll have.</p> <p>I forsee another great application problem coming from this, Steve. I'll post the information when I have it.</p>	<p>Student talking to student</p>	<p>9t-25</p>

Narrative	Analysis Categories	Code Line Count
<p>Susan, how do I send diagrams to you for inclusion? Is there a file format or file type you can work with? I'll have to describe the kilt pattern effectively once I have it.</p>		
<p>6:18) 05-NOV-2000 18:47 Steve Leinwand (sleinwand)            Okay Fred - you're on: In your plan for the seating arrangement be sure to include your consideration of viewing angle - that is what angle from the center of the screen provides clear viewing and at what angle are you seated in such a way that there is distortion. In addition, in your plan, be sure to include consideration of the size of the screen considering the projector is placed 70 metres (60 plus 10) from the screen and how close it is reasonable to sit to such a screen. What else can we add to this?</p>	<p>Acknowledges student ideas</p>	<p>3a-12</p>
<p>6:19) 06-NOV-2000 01:43 Fred G. Harwood (fharwood)            Is it live theatre where depth of stage and the wings have importance or a movie theatre as you've assumed? And in live theatre, I was spit upon in the first row (or is spittled a milder term) by the lead in "Jacques Brel" during one aria. Is this acceptable? Was this my 15 minutes of fame?</p>	<p>Factual response</p>	<p>8f-7</p>
<p>6:20) 06-NOV-2000 09:10 Steve Leinwand (sleinwand)            Interesting - I just assumed we are talking about a movie theatre - never imagining live theatre. I think the movie context is more interesting. Regarding spit from Jacques Brel - I hardly think that measures up to fame - so you'll have to keep trying.</p>	<p>Evaluates results: re-diagnose needs</p>	<p>3E-6</p>
<p>6:21) 06-NOV-2000 09:54 Fred G. Harwood (fharwood)            How about if the live stage was rectangular in the original plan and then a redesign was considered to use the same space as a theatre-in-the-round with a circular stage of roughly the same size, but with seats being</p>	<p>Evaluative response</p>	<p>9e-14</p>

Narrative	Analysis Categories	Code Line Count
<p>arranged about the stage on four sides?</p> <p>We haven't discussed the concepts of aisles and what factors should be considered for their size and location and if wheel-chair access has been accommodated.</p> <p>My brother-in-law took me to the front row behind the backboard for some NBA games and I got sweat on me from the players. Do I still need to keep trying?</p>		
<p>6:22) 06-NOV-2000 12:16 Steve Leinwand (sleinwand)</p> <p>You worry about sweat and spit, I'd like to turn to the appropriate number of male and female facilities for a given theatre (movie or live) and extend this to concert halls and stadiums. The question is why is there always a line for women and never for men? What ratios would you suggest to ensure that neither males nor females would have to wait more than 3 minutes to get to a facility. Obviously the question of whether or not beer was being served and how long any particular event would be (an 8 hour performance of Wagner's the Ring?) would have to be accounted for. OK? Had enough?</p>	Evaluates results: re-diagnose needs	3E-14
<p>6:23) 06-NOV-2000 19:32 Fred G. Harwood (fharwood)</p> <p>Excellent extension! (pardon the pun) I wonder if the women suspect the men are using the sinks??? I wish others would get involved with some of their questions.</p>	Evaluative response	9e-4

<b>Acknowledges student ideas</b>	<b>3a-17</b>
<b>Asks convergent questions</b>	<b>4c-9</b>
<b>Asks factual questions</b>	<b>4f-15</b>
<b>Convergent response</b>	<b>8c-20</b>
<b>Diagnoses learning needs</b>	<b>3d-16</b>
<b>Evaluates results: re-diagnose needs</b>	<b>3E-20</b>
<b>Evaluative response</b>	<b>9e-42</b>
<b>Factual lecturing</b>	<b>5f-94</b>
<b>Factual response</b>	<b>8f-7</b>
<b>Gives or asks for resources</b>	<b>5R-11</b>
<b>Initiated comment</b>	<b>9i-5</b>
<b>Motivational lecturing</b>	<b>5M-24</b>
<b>Student talking to student</b>	<b>9t-25</b>

**Workshops**

**Table # 91: Workshop 2, Item 3, Practical Ideas for Creating and Using Performance Tasks**

Narrative	Analysis Categories	Code Line Count
<p>3:5) 22-AUG-2000 16:45 Susan Doherty (squinnxx) Steve Leinwand, Workshop 2</p> <p>Title: Practical Ideas for Creating and Using Performance Tasks in Your Classroom Description: We'll use an array of examples to model creating and using performance tasks both instruction and assessment of key mathematical ideas.</p> <p>Bio blurb: STEVEN J. LEINWAND Steve Leinwand is a mathematics supervisor with the Connecticut Department of Education. He is responsible for a broad array of activities, including curriculum development, professional development, program evaluation, and student and teacher assessment, as they relate to the improvement of school mathematics. He has served in this position for 21 years, having previously taught and been the district mathematics supervisor in the Middletown, CT public schools.</p> <p>Steve is a former member of the Mathematical Sciences Education Board of the National Research Council and is past-president of the 2,600 member National Council of Supervisors of Mathematics. He has served on the NAEP National Assessment Item Development Panel, the New Standards Mathematics Advisory Committee, and chaired NCTM's Professional Development and Status Advisory Committee. In addition, Steve has just completed a term on the NCTM Board of Directors.</p> <p>Steve is also a senior author of Scott Foresman Addison Wesley's K-8 mathematics program. He has written numerous articles and is a frequent speaker at state, regional and national conferences.</p> <p>Steve's interests are alternative assessments, reform strategies, developing and supporting change agents, and leadership strategies for</p>	<p>Orientation lecturing</p>	<p>50-39</p>

Narrative	Analysis Categories	Code Line Count
overcoming obstacles to change.		
<p>3:6) 23-AUG-2000 09:15 Susan Doherty (squinnxx) Ann Lawrence - lead, Panel 3, Teacher's Perspective Bio: Ann Lawrence has been a middle school mathematics teacher for over twenty-five years. She is the author of articles and books focusing on topics from using calculators and computers to problem solving and algebraic thinking in the middle school classroom. Appropriate assessment has been one of the key components in each of these endeavors. Recently she was the director of PBS Mathline's Algebraic Thinking Mathematics Project. How 'bout "Classroom Assessment from the Inside: Teachers' Perspectives" for the title and the following description? -Join us as a panel of teachers exchange experiences, ideas, and samples of K-12 classroom assessment</p>	Orientation lecturing	50-19
<p>3:7) 24-AUG-2000 13:17 Susan Doherty (squinnxx) Dave Barnes, workshop 5 Technology and Assessment: How do they fit together?  Level: Middle and Secondary level What can learn about students while they are holding a calculator or sitting in front of a computer? This session will explore a wide range of issues associated with assessing students when they have access to technology.</p>	Orientation lecturing	50-10
<p>3:8) 04-SEP-2000 18:06 Susan Doherty (squinnxx) Susan Palma, panel 3 Susan Palma is an elementary classroom teacher and building math and science coordinator in Regional School District 15 in Connecticut. She has been involved in Performance Based Learning and Assessment in the area of mathematics for the last ten years. As one of the authors of A teacher's Guide to Performance Based Learning and Assessment she has presented workshops</p>	Orientation lecturing	50-16

Narrative	Analysis Categories	Code Line Count
<p>around the country including Tennessee, Maine and Alaska. She was also a panelist on the Anenberg/CPB TV Workshop "Math and Science Assessment. What's the Point?" She is also a 1999 Presidential Awardee for Excellence in Mathematics or Science Teaching from Connecticut.</p>		
<p>3:9) 06-SEP-2000 18:53 Susan Doherty (squinnxx)  George Bright, Panel 2: Classroom Assessment: Issues of Professional Development  George W. Bright is professor of mathematics education at The University of North Carolina at Greensboro. In 1998 he and Jeane Joyner edited the book, "Classroom Assessment in Mathematics: Views from a National Science Foundation Working Conference," and authored the book, "Focusing on Classroom Assessment."</p>	Orientation lecturing	50-11
<p>3:10) 06-SEP-2000 18:54 Susan Doherty (squinnxx)  Panel 2 Questions from George:  What is classroom assessment?  How much mathematics do teachers need to know in order to implement classroom assessment effectively?  How is effective professional development on classroom assessment for inservice teachers different from effective professional development for preservice teachers?  How can classroom assessment strategies be integrated in curriculum materials in ways that help both students and their teachers?  How can professional development providers be educated about effective classroom assessment strategies?</p>	Orientation lecturing	50-15
<p>3:11) 06-SEP-2000 18:57 Susan Doherty (squinnxx)  Carey's tweeks of Ann's questions for panel 3:  1. What do you feel are the purposes of classroom assessment?  2. How do you achieve this in your classroom assessments?  3. What are some unique features of how you</p>	Asks convergent questions	4c-33

Narrative	Analysis Categories	Code Line Count
<p>use assessment?</p> <p>4. How do you analyze assessments to improve instruction?</p> <p>5. What sources have you found that contain good classroom assessment instruments/tasks?</p> <p>6. What opportunities do you find technology offering the teacher asonthe area of classroom assessment?</p> <p>Carey, Here are the questions that Ann Lawrence submitted. Just wanted to give you the chance to ok them before I send out to the rest of the panel. Keep in mind that these are "just to get things started" questions...</p> <p>Questions for Classroom Assessment Panel</p> <p>&gt; 1. Why should teachers change their methods of classroom assessment?</p> <p>&gt; 2. What are the purposes of classroom assessment?</p> <p>&gt; 3. What are the characteristics of good classroom assessment?</p> <p>&gt; 4. What are some examples of good classroom assessment?</p> <p>&gt; 5. What are some sources for good classroom assessment instruments/tasks?</p> <p>6. What opportunities does technology offer for classroom assessment?</p>		
<p>3:12) 08-SEP-2000 16:21 Susan Doherty (squinnxx)</p> <p>Panel 1 from Mari Muri</p> <p>"Those Dreaded Tests Kids HAVE TO Take: The Pluses and Minuses"</p> <p>Description:</p> <p>"This panel will look at and discuss the positive and negative aspects, the ups and downs of district-wide and state-wide mandated assessment. You can look at these tests as impositions or you can look at them as helping to shape instruction. We will discuss both sides and try to help you decide how to make the best of these tests imposed from the outside."</p>	Orientation lecturing	50-12
<p>3:13) 14-SEP-2000 19:26 Susan Doherty (squinnxx)</p> <p>Panel 1: School-Wide Objectives: Working Together to Improve Student Achievement</p> <p>We will explore what works when it comes to</p>	Orientation lecturing	50-27

Narrative	Analysis Categories	Code Line Count
<p>assessment, how to use the information learned from assessment to inform instruction, what instructional strategies are also assessment strategies, how to balance classroom assessment and school-wide assessment for state accountability, how to implement portfolio assessment, and more!</p> <p>BIO for Sheila Vice: Sheila Vice is Mathematics Team Leader and former Director of Mathematics Portfolios at the Kentucky Department of Education. Among her many responsibilities are the coordination of statewide P-12 mathematics professional development provided by the 8 regional centers, development of curriculum documents, implementation of the Teachers' Professional Growth Fund, and assisting in the design of the state assessment, the Kentucky Core Content Test. From 1992-1996, she was Co-Director of the Model Change Sites and Performance Assessment components of Kentucky's State Systemic Initiative funded by NSF.</p>		
<p>3:14) 15-SEP-2000 16:41 Susan Doherty (squinnxx) You found her! Our program is fairly set, however, review the three Panel sessions as described on the program page of our web site</p> <p><a href="http://www.groupjazz.com/mathweb2000">http://www.groupjazz.com/mathweb2000</a>. If you think your "voice" would add to one of those sessions, I'd be happy to discuss addin you to the program.</p> <p>I would be very interested in joining Panel #2: Classroom Assessment: Issues of Professional Development. I designed a course here at East Tennessee State University called Math 2000: Logic and Problem Solving. The College of Education, looking for a math course to train K-12 teachers, suggested adding geometry. Dr. Janice Huang redesigned the course as Logic, Problem Solving, and Geometry, and I have been teaching it for the last several years, from class notes that I have written.</p> <p>One of the key issues I address in this course is the importance of assessing mathematical</p>	Factual lecturing	5f-44

Narrative	Analysis Categories	Code Line Count
<p>reasoning. The CBMS Recommendations on Teacher Preparation express a concern that teachers are not being prepared to assess the mathematical ability of their students in the area of mathematical reasoning. The report recommends that "instruction for future teachers focus upon developing a deep mathematical knowledge of school mathematics"</p> <p>Many teachers are much more comfortable assessing quick recall of facts. But the New Standards stress the importance of reasoning and problem solving. How are teachers best trained to assess the mathematical reasoning skills of their students? This is the subject I would like to raise as part of this panel discussion.</p> <p>Dr. Rick Norwood Department of Mathematics East Tennessee State University</p>		
<p>3:16) 20-SEP-2000 00:16 Susan Doherty (squinnxx) Rick Norwood Terrific. You can get a picture of me and a vita at <a href="http://www.etsu.edu/math/norwood.htm">www.etsu.edu/math/norwood.htm</a> As for a brief bio, how's this: Dr. Rick Norwood is an assistant professor at East Tennessee State University. His research interests are knot theory and logic. He has helped to design a course for education majors titled "Logic, Problem Solving, and Geometry". His hobbies included science fiction and classic comic strips.</p>	Factual lecturing	5f-10
<p>3:17) 04-OCT-2000 11:27 Susan Doherty (squinnxx) Dave Barnes is a mathematics educator and the Director of Electronic Resources at the National Council of Teachers of Mathematics (NCTM). Dave came to NCTM in February and assisted in the final production of the E-Standards Web site and CD and now is working to move NCTM toward becoming an e-Council. Prior to NCTM, Dave was at the University of Missouri and involved in preservice and inservice teacher education, the content developer for the first year of the PBS</p>	Orientation lecturing	5O-14

Narrative	Analysis Categories	Code Line Count
Mathline Web site, and directed the design and development of the Show-Me Center and Figure This! Web sites.		
<p>3:18) 06-OCT-2000 13:41 Susan Doherty (squinnxx)</p> <p>Dr. Michael Chappell is an Associate Professor and teaches methods courses for elementary, middle grades, and secondary pre-service students of mathematics education, as well as graduate courses related to trends in education and research practices in mathematics education. Prior to coming to USF, Dr. Chappell taught mathematics at the high school level for five years; she served as a college adjunct mathematics instructor for 3 years. Presently, her research interests include the mathematics achievement of African-American learners and the professional development of teachers of mathematics. Dr. Chappell has worked on a number of mathematics education projects, including her role as an investigative researcher for the QUASAR Project. She has been active in national, state, and local mathematics education organizations such as the National Council of Teachers of Mathematics, the Association of Mathematics Teacher Educators, the Benjamin Banneker Association, and the Florida Education Fund. She has served in the role of officer and board/committee member in these organizations. During the past 19 years, Dr. Chappell has demonstrated a breadth of knowledge in mathematics teaching and learning through her teaching and presentations. In addition, she has been an invited speaker at conferences and has provided numerous teachers with professional development workshops.</p>	Orientation lecturing	50-36

**Asks convergent questions**  
**Factual lecturing**  
**Orientation lecturing**

**4c-33**  
**5f-54**  
**50-199**

**Workshop 3**

**Table # 92: Workshop 3, Item 1, Open Ended Response**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 3 Item 1 Mathweb 2000 Center, Workshop 3, Item 1</p> <p>Title</p> <p>1 Workshop 3: Open-ended response 0</p> <p>2 Open Ended Questions - Maintaining a Balance 1</p> <p>3 Similarities and Differences 6</p> <p>4 Factors to consider 2</p> <p>5 Samples 3</p> <p>6 Assessment 10</p> <p>7 What do you think? 20</p>		
<p>Workshop 3 Item 1</p> <p>Workshop 3: Open-ended response &lt;<a href="http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif">http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif</a>&gt;</p>		
<p>Item 1 11-SEP-2000 20:44 Susan Doherty (squinnxx)</p> <p>Workshop 3: Open-ended response with Marge Petit is now open! Feel free to ask questions throughout the workshop.</p> <p>Open Ended Response</p> <p>Marge Petit NCIEA (The Center for Assessment)</p> <p>Marge Petit has been a Vermont educator since 1968. For the past four years she served as Vermont's Deputy Commissioner of Education. In her role as Deputy Commissioner she provided statewide leadership with Commissioner Marc Hull in the implementation of Vermont's standards, accountability, school improvement, and assessment systems.</p>	<p>Orientation Lecturing</p>	<p>50-8</p>

**Orientation Lecturing**

**50-8**

**Workshop 3**

**Table # 93: Workshop 3, Item 2, Response 1**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 3 Item 2</p> <p>[*] Mathweb 2000 Center , Workshop 3 , Item 2 , Resp 1</p> <p>Open Ended Questions - Maintaining a Balance Item 2 05-NOV-2000 17:44 Susan Doherty (squinnxx) Open Ended Questions - Maintaining a Balance</p>		
<p>2:1) 05-NOV-2000 17:49 Marge Petit (mpetit)</p> <p>Since accidental assessment is never good enough, decisions about the use of open-ended or closed response questions need to be intentional.</p> <p>In this session we will investigate a number of questions about open-ended questions by closely examining different versions of the McDonalds problem found in Workshop 2.</p> <p>Questions to consider: What are similarities and differences between open-ended and closed response questions? How open is too open? What are some guidelines to help decide when to use an open-ended question?</p> <p>In Workshop 2 , Practical Ideas for Creating and Using Performance Tasks in Your Classroom, Steve Leinwand provided some very important characteristics of performance activities that hold whether a performance activity is open or closed response.</p> <p>They bear repeating here - because - any discussion in this workshop assumes this knowledge.</p> <p>Performance Activities are opportunities for students to actively show what they know and can do in mathematics, in a situation, for a purpose.</p>	<p>Factual Lecturing</p>	<p>5f-35</p>

Narrative	Analysis Categories	Code Line Count
<p>High quality performance activities have the following characteristics:</p> <p>They focus on essential mathematics.  They are authentic.  They are equitable.  They are rich.  They are engaging.  They actively involve the student.  They are accessible.</p>		
<p>Steve Leinwand, Workshop 2</p> <p>For open-ended problems add one important characteristic...</p> <p>In order to solve the problem the student must identify and implement additional constraints or factors not explicitly stated in the problem presentation.</p>	<p>Student Talk  Initiated Comment</p>	<p>9i-6</p>

**Factual Lecturing**  
**Initiated Comment**

**5f-35**  
**9i-6**

**Workshop 3**

**Table # 94: Workshop 3, Item 3, MathWeb 2000 Center, Similarities and Differences**

Narrative	Analysis Categories	Code Line Count
<p>[*] MathWeb 2000 Center , Workshop 3 , Item 3 , Resp 6</p> <p>Workshop 3 Item</p> <p>Similarities and Differences</p>		
<p>Item 3 05-NOV-2000 17:51 Susan Doherty (squinnxx)</p> <p>Similarities and Differences</p>		
<p>3:1) 05-NOV-2000 17:54 Marge Petit (mpetit)</p> <p>Below are two problems; one open response (many solutions possible) and the other closed response (one solution).</p>	<p>Orientation Lecturing</p>	<p>5O-3</p>
<p>Closed response: (McDonald's problem from Workshop 2)</p> <p>Example One: Big Macs cost \$1.59 each and you have \$10 to spend. How many Big Macs can you buy? Include the tax in your solution.</p> <p>Open Response:</p> <p>Example Two: You and four friends stop at McDonalds on your way home from school for a snack. You pool all your money and find that you have \$15. Using the menu provided present one way that you and your friends can get a snack while spending as close to the \$15 dollars as possible. Consider tax in your solution. (Students are provided a menu.)</p> <p>How are these problems alike and how are they different?</p> <p>Similarities:</p> <p>The context will make sense to the students and they probably will have experienced each of these situations.</p> <p>The problems provide students with an opportunity to demonstrate their skills and knowledge of rational number operations.</p>	<p>Asks Factual Questions</p>	<p>4f-40</p>

Narrative	Analysis Categories	Code Line Count
<p>The problems force the student to consider tax as part of the solution, not as an after thought.</p> <p>Differences:</p> <p>Example one (closed) has one solution, while example two (open) has multiplesolutions.</p> <p>Example two provides students with the opportunity to identify and implement other constraints and factors that might impact the solution that are not explicitly stated in the problem. (E.g. 1) The group decides that everyone will get an equal share. 2) Two students only like cheeseburgers, while two dislike cheeseburgers.)</p> <p>Example One will be easier to assess for use of rational numbers in this context, but the number of variables that the student has to consider is less complex.</p> <p>Example Two should provide additional information about a student's skill at setting and implementing their own constraints.</p>		
<p>3:2) 12-NOV-2000 12:49 Glenn Allinger (allinger)</p> <p>I'm a little confused by your use of the terms open response, closed response and open-ended. For example, where are multiple choice, or true-false questions categorized? For instance, I've experienced people saying that multiple choice answer problems are closed response. Can any problem for which students must show work and justify their answer possibly be categorized as open response or open-ended, depending on the problem statement? Are you making distinctions between the problem itself and the form of student response that is required?</p> <p>I'm not trying to split "hairs" here but just want to understand accurate meanings for the words that are being used in your discussion and participants' responses.</p>	Initiated Comment	9i-17
<p>3:3) 14-NOV-2000 15:35 Rick Norwood (rnorwood)</p>	Student talking to student	9t-6

Narrative	Analysis Categories	Code Line Count
<p>Multiple choice and true false questions are closed response. Questions that in which students must show work and justify answers are open response. Open-ended response questions are questions such as "Tell me everything you know about factoring."</p>		
<p>3:4) 15-NOV-2000 09:10 Susan A. Stuart (sues)</p> <p>I agree that multiple choice and true/false are closed response - in fact they seem to be the "extreme" closed response. Showing work and justifying answers does not, in itself, make a response open. I think of an open-ended response question as one that the teacher has relinquished control of the thinking to the student. Is there a difference between open-ended and open-beginninged (personally I like the beginning to the question to be open).</p>	<p>Student talking to student</p>	<p>9t-10</p>
<p>3:5) 15-NOV-2000 19:20 Fred G. Harwood (fharwood)</p> <p>We also need to be so careful with what we are assessing in a MC format.</p> <p>Eg. Factor the following <math>x^2 + 5x + 6</math>  a) <math>(x + 3)(x - 2)</math> b) <math>(x + 1)(x + 6)</math> c) <math>(x + 3)(x + 2)</math>  d) <math>(x - 3)(x - 2)</math> e) <math>(x + 1)(x + 5)</math></p> <p>Are we assessing factoring or expanding?  [working backwards from the answer to get the question]</p> <p>Better is to ask: When <math>x^2 + 5x + 6</math> is factored, one of the factors is:  a) <math>(x + 3)</math> b) <math>(x + 1)</math> c) <math>(x - 2)</math> d) <math>(x - 6)</math>  e) <math>(x + 5)</math></p> <p>This still isn't a perfect test of factoring but it is an improvement.</p>	<p>Student talking to student</p>	<p>9t-13</p>
<p>3:6) 16-NOV-2000 14:34 Carole Bilyk (cbilyk)</p> <p>I've heard questions that ask students to show work be categorized as constructed reponse. Within constructed response, you could have categories of restricted response (closed), restricted response with explanation (not closed but not completely open), or open</p>	<p>Student talking to student</p>	<p>9t-14</p>

Narrative	Analysis Categories	Code Line Count
<p>response. Multiple Choice and True-False and Matching would not be considered constructed response.</p> <p>I sympathize with Glenn on the use of language. It seems to me that language usage is very important (not only at workshops like this with an international flavor but also in our classrooms).</p>		

**Asks Factual Questions**  
**Initiated Comment**  
**Orientation Lecturing**  
**Student talking to student**

**4f-40**  
**9i-17**  
**5O-3**  
**9t-23**

**Workshop 3**

**Table # 95: Workshop 3, Item 4, Factors to Consider**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 3 Item 4</p> <p>Item 4 05-NOV-2000 17:55 Susan Doherty (squinnxx) Factors to consider</p>		
<p>4:1) 05-NOV-2000 17:58 Marge Petit (mpetit)</p> <p>Factors to consider when making the decision to use open or closed response questions: Place in the curriculum Mathematical to be assessed Process skill to be assessed</p> <p>I. Place in the curriculum: Closed response questions: If calculating sales tax is a relatively new skill and you want to assess a students understanding of the impact of sales tax on cost without complicating it with other factors, then I would use a closed response question.</p> <p>Open-ended questions: Use an open-ended question if you are confident about a student's use of rational numbers in a simple situation... and you want to assess its use in more complicated situations.and you want to assess students ability to set and implement constraints in a familiar context.</p> <p>II. Mathematics being assessed: The questions that need to be asked when considering the use of open-ended questions are... What is the mathematics being assessed? Does that mathematics lend itself to the open format?</p> <p>III. Process being assessed: Use open-ended problems when you are assessing students ability to solve problems and consider and implement constraints not stated in the problem.</p> <p>Should open-ended problem be used for every problem-solving situation?</p> <p>No, decisions about the use of open-ended problems should be intentional and based upon</p>	<p>Factual Lecturing</p>	<p>5f-48</p>

Narrative	Analysis Categories	Code Line Count
<p>the mathematics being assessed!</p> <p>Why are open-ended problems important?</p> <p>The answer to this question is very straightforward.</p> <p>Open-ended problems closely line up with the day-to-day problem solving that students will have to do throughout their lives.</p> <p>Experiences in solving open-ended problems should increase a student's ability to see application of mathematics in their life.</p> <p>Experiences in solving open-ended problems should (if problems are designed well) increase a student's ability to set and implement constraints in a problem.</p>		
<p>4:2) 05-NOV-2000 18:05 Marge Petit (mpetit)</p> <p>Be aware of the open problem that yields nothing...</p> <p>...How open is too open?</p> <p>Compare these two problems:</p> <p>Original Example Two - McDonalds  Example Two: You and four friends stop at McDonalds on your way home from school for a snack You pool all your money and find that you have \$15. Using the menu provided, present one way that you and your friends can get a snack while spending as close to the \$15 dollars as possible. Consider tax in your solution. (Students are provided a menu.)</p> <p style="padding-left: 40px;">Constraints Provided:</p> <ol style="list-style-type: none"> <li>1. Total amount of money available</li> <li>2. Values of food from menu</li> <li>3. Must include sales tax</li> <li>4. Must spend as close to \$15 as possible</li> </ol> <p>Example Three McDonalds - Too open</p> <p>Example Three: You and four friends stop at McDonalds on your way home from school. You pool all your money and find that you have</p>	<p>Gives or asks for Resources</p>	<p>5R-40</p>

Narrative	Analysis Categories	Code Line Count
<p>\$15. Using the menu provided present one way that you and your friends can all get some fries, soda and burgers. Consider tax in your solution. (Students are provided menu.)</p> <p>Constraints Provided:</p> <ol style="list-style-type: none"> <li>1. Total amount of money available</li> <li>2. Values of food from menu</li> <li>3. Must include sales tax</li> </ol> <p>Since no constraint was placed on the amount that must be spent, it is possible to solve Example Three by purchasing one hamburger, one order of fries, and one coke. With this solution students only have to calculate the tax and add it on to the cost.</p> <p>It potentially requires less skill and knowledge of rational numbers than the closed response McDonalds problem.</p>		

**Factual Lecturing**  
**Gives or asks for Resources**

**5f-48**  
**5R-40**

**Workshop 3****Table # 96: Workshop 3, Item 5,, Response 3, Samples**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 3 Item 5</p> <p>[*] Mathweb 2000 Center, Workshop 3, Item 5 , Resp 3</p> <p>Item 5 05-NOV-2000 18:15 Susan Doherty (squinnxx)</p> <p>Samples</p>		
<p>5:1) 05-NOV-2000 18:17 Marge Petit (mpetit)</p> <p>Here are two examples of open-ended problems with very few constraints (They are too open). Read the problems and identify constraints that are provided and additional constraints that should be provided to elicit meaningful mathematics. Think about and discuss why you made those decisions.</p> <p>The Trip: You are in charge of planning a class trip. The trip should include no more than five stops. Use the attached road map to plan your route. Provide your teacher with your plan and the cost for each parent that will drive.</p> <p>What mathematics would this problem elicit? Are there any constraints that are absolutely necessary that are not stated in the problem situation?</p> <p>f you add constraints, how does the constraint strengthen the mathematics that can be elicited?</p> <p>How can this problem be rewritten as a closed problem that would elicit skills and knowledge of use scale and rates without complicating them with other factors?</p> <p>Preparing for the Games: You are in charge of determining the number of games to be played in a local basketball tournament. You have three days to run the tournament. Provide a plan that can be presented to the local tournament committee.</p>	<p>Gives or asks for Resources</p>	<p>5R-44</p>

Narrative	Analysis Categories	Code Line Count
<p>What mathematics would this problem elicit?</p> <p>Are there any constraints that are absolutely necessary to assure that meaningful mathematics is elicited that are not stated in the problem situation?</p> <p>Is it possible to solve this problem using just whole number operations? What can be done to change that?</p> <p>If you add constraints, how does the constraint strengthen the mathematics that can be elicited?</p> <p>How could the problem be rewritten to elicit a student's knowledge and skill in generalizing a pattern symbolically?</p>		
<p>5:2) 06-NOV-2000 10:10 Fred G. Harwood (fharwood)</p> <p>Are we assuming this is an in-class assignment? If not, it tests the students technical know-how on downloading the options from one of the many websites with complete draw choices and times and organizational plans.</p> <p>Also, do we want to offer two or three choices of the same mathematical skills but in different contextual areas to allow for a broader buy-in for students? Not all students are familiar with basketball tournaments making this culturally biased. I teach in an area of high ESL populations from a wide variety of cultures but mostly Asian.</p>	Initiated Comment	9i-13
<p>5:3) 07-NOV-2000 08:24 Marge Petit (mpetit)</p> <p>Fred I think that your comments are valid. Are tournaments of all kinds a problem or is the issue basketball? If it is the latter than teachers should use culturally unbiased activities.</p>	Asks Evaluative Questions	4e-4

**Asks Evaluative Questions**  
**Gives or asks for Resources**  
**Initiated Comment**

**4e-4**  
**5R-44**  
**9i-13**

**Workshop 3**

**Table # 97: Workshop 3, Item 6, Response 10, Assessment**

Narrative	Analysis Categories	Code Line Count
<p>[*] Mathweb 2000 Center, Workshop 3 , Item 6 , Resp 10</p> <p>Workshop 3 Item 6</p> <p>Assessment</p> <p>Item 6 05-NOV-2000 18:20 Susan Doherty (squinnxx)</p>		
<p>6:1) 05-NOV-2000 18:21 Marge Petit (mpetit)</p> <p>Assessing open-ended problems: There are three possibilities.</p> <p>1.A generalized - holistic rubric as discussed in Workshop 2</p> <p>2.A generalized analytical rubric</p> <p>3.A task specific rubric</p> <p>I have a preference for generalized analytic rubrics, while Steve Leinwand (Workshop 2) has a preference for generalized holistic rubrics. Someone else might have a preference for task specific rubrics.</p> <p>Regardless of which type rubric you decide to use the following general guidelines should be implemented.</p> <p>Be clear in the problem statement what is expected in the solution. Statements like --- "In this problem you will be assessed on ..." are essential.</p> <p>Assessment information to the students should provide information on how well they met expectations in their solutions and what they can do to improve.</p> <p>The rubric should clearly state the mathematics expectations.</p>	<p>Factual Lecturing</p>	<p>5f-22</p>
<p>6:2) 07-NOV-2000 01:21 Jeanne Shimizu (jeanne)</p> <p>Marge, Would you give us more information about what you call "generalized analytic</p>	<p>Initiated Comment</p>	<p>9i-4</p>

Narrative	Analysis Categories	Code Line Count
<p>rubrics" and "task specific rubrics," please?</p> <p>Thank you.</p>		
<p>6:3) 07-NOV-2000 03:06 Marcia Banks (marciabanks)</p> <p>Yes, I am interested in seeing examples of rubrics for primary maths, if feasible.</p> <p>Thank you. Marcia Banks Geneva, Switzerland</p>	<p>Convergent Response</p>	<p>8c-2</p>
<p>6:4) 07-NOV-2000 08:54 Marge Petit (mpetit)</p> <p>Generalized analytic rubrics, like holistic generalized can be used across a set of similar types of tasks, like open-ended problem solving. In both cases a clear decision must be made about what is to be assessed. The difference lies in the way the performance levels are communicated to the student.</p> <p>Holistic - Example</p> <p>Proficient level</p> <ul style="list-style-type: none"> <li>- Solution is accurate</li> <li>- Student uses multiple approaches to verify the solution</li> <li>- The solution is communicated using accurate and appropriate mathematical language and symbols.</li> <li>- Representations are accurate and appropriately applied given the nature of the mathematics.</li> <li>- Constraints identified make sense for the problem and considered in the solution of the problem</li> <li>- etc...</li> </ul> <p>This combination of criteria would be communicated at other performance levels.</p> <p>In an analytic generalized rubric the performance levels would be communicated for each criteria. E.g.</p> <p>Criteria... Accuracy of the solution --- define</p>	<p>Factual Lecturing</p>	<p>5f-45</p>

Narrative	Analysis Categories	Code Line Count
<p>performance levels  Mathematical Communication --- define performance levels  Representation --- define performance levels  Constraints --- define performance levels  etc...</p> <p>Task specific rubrics would assess the same qualities but identify specific mathematics, specific representations et al based upon the problem at hand.</p> <p>In the next workshop the presenter will provide very specific examples of rubrics used in the Kentucky assessment system.</p> <p>Marcia - I will also try and link you up with a primary teacher that is willing to share some math rubrics for the primary age group.</p>		
<p>6:6) 08-NOV-2000 13:45 Marge Petit (mpetit)</p> <p>The following sites have examples of rubrics, tasks, and examples of student work.  <a href="http://www.educ.msu.edu/MARS/personnel/ba.html">http://www.educ.msu.edu/MARS/personnel/ba.html</a></p>	Gives or asks for Resources	5R-4
<p>6:7) 09-NOV-2000 18:39 Luly Sixto-Yero (sixtol)</p> <p>I am thinking of experimenting with the open &amp; closed ended McDonald's Problems with my fifth grade students. How shall I begin designing a rubric(what type,etc.?) to assess this activity?</p> <p>Sebring, FL</p>	Convergent Response	8c-5
<p>6:8) 10-NOV-2000 09:39 Marcia Banks (marciabanks)</p> <p>Thank you for your assistance, Marge! The materials I have been able to get via the links are quite useful. At <a href="http://www.exemplars.com/">http://www.exemplars.com/</a> I saw a science rubric using diagrams. I like this idea of using diagrams and will try the idea next week with my 15 multi-age non-English speaking maths group. Since most of our students in the school have English as a second, third, or even fourth language, I think this way of getting feedback from the students</p>		8c-12

Narrative	Analysis Categories	Code Line Count
will be quite useful. Thank you for your help. Marcia		
6:9) 10-NOV-2000 18:52 Marge Petit (mpetit)  Marcia... Glad that the link was helpful. Marge	Accepts, Clarifies, Student Feelings	1-1
6:10) 10-NOV-2000 18:54 Marge Petit (mpetit)  Luly, I think Steve Leinwand might already have a rubric for the McDonalds problem and he will also be able to provide some ideas of the best way to introduce the problem to the class. Marge	Gives or asks for Resources	5R-4

**Accepts, Clarifies, Student Feelings**  
**Convergent Response**  
**Factual Lecturing**  
**Gives or asks for Resources**  
**Initiated Comment**  
**Student Talk**

1-1  
 8c-7  
 5f-67  
 5R-8  
 9i-4  
 8c-12

**Workshop 3**

**Table # 98: Workshop 3, Item 7, Response 20 What do you Think?**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 3 Item 7 Mathweb 2000 Center, Workshop 3, Item 7 Resp 20</p> <p>What do you think?</p> <p>Item 7 05-NOV-2000 18:22 Susan Doherty (squinnxx)</p>		
<p>7:1) 05-NOV-2000 18:24 Marge Petit (mpetit)</p> <p>Here are a few questions we can consider as we engage in conversation.</p> <p>For open-ended problems, what do you see as the strength and limitations of each type of rubric?</p> <p>Have you developed other guidelines for making the decision between the use of a closed response question or open-ended question?</p> <p>Do you have any open-ended problems that you are willing to share for discussion purposes?</p> <p>Do you have any open-ended questions that you found successful that you are willing to share?</p>	<p>Asks Convergent Questions</p>	<p>4c-15</p>
<p>7:2) 06-NOV-2000 10:18 Fred G. Harwood (fharwood)</p> <p>For cooperative groups of four students:</p> <p>Given a square, form semicircles from each of the four sides that meet in the squares center. They overlap in a shamrock leaf pattern. Show three different ways to calculate the area of the leaves. Please show all your work clearly and circle each of the different techniques that you chose for your solution.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-8</p>
<p>7:3) 07-NOV-2000 08:55 Marge Petit (mpetit)</p> <p>Thanks Fred... Any solutions?</p>	<p>Asks for Sharing of experiences</p>	<p>4s-1</p>

Narrative	Analysis Categories	Code Line Count
<p>7:4) 09-NOV-2000 09:51 Rick Norwood (rnorwood)</p> <p>I've noticed that a lot of the problems we pose for students are pretty prosaic. I had the great pleasure of teaching computer science to a group of inner city Black students from Patterson New Jersey, and what they liked best was the more imaginative challenges. How can you use a computer to draw a picture of a rocket ship or a superhero? How can you animate it?</p>	<p>Convergent Response</p>	<p>8c-8</p>
<p>7:5) 09-NOV-2000 11:10 Fred G. Harwood (fharwood)</p> <p>Marge has asked if there are any solutions to the shamrock problem of 7:2 and thus far we haven't seen any active learners.</p> <p>Anyone trying it?</p>	<p>Initiated Comment</p>	<p>9i-4</p>
<p>7:6) 09-NOV-2000 15:44 Rick Norwood (rnorwood)</p> <p>Shamrock problem:</p> <p>I didn't realize that you really wanted solutions from us.</p> <p>Method One: Two circles minus the windmill (because the windmill got counted twice) equals the square, so the area of the windmill is the area of two circles minus the area of the square.</p> <p>Method Two: Cut out the windmill, and put it on one pan of a sensitive balance. Cut the square into 100 pieces (10x10) and one by one put them on the other pan until they balance.</p> <p>Method Three: Find the area of one blade of the windmill and multiply by 4. (Finding the area of one blade is left as an exercise for the reader.)</p> <p>Method Four: Search the web using the key words: "area problems" AND "trick questions".</p>	<p>Student share experiences and/or solutions</p>	<p>9s-18</p>
<p>7:7) 09-NOV-2000 16:55 Fred G. Harwood</p>	<p>Student talking to student</p>	<p>9t-9</p>

Narrative	Analysis Categories	Code Line Count
<p>(fharwood)</p> <p>Can you find the area of one blade? Or do you need to find half a leaf and multiply by 8? (Area of quarter circle minus area of triangle).</p> <p>PS. No group utilized the physical model. You have a first there but could you use heavier pieces of wood, a scroll saw and a less sensitive balance?</p> <p>I wonder if AND "logic problems" would get more hits than "trick questions"?</p>		
<p>7:8) 10-NOV-2000 06:04 Leslie Ercole (ercole)</p> <p>Hi Marge,</p> <p>I wrote this problem for my 6th graders who are working in the Mathscape curriculum unit: What Does the Data Say? We had been studying measures of central tendency.</p> <p>You have been completing great work in math class this year. Your average quiz score is 85! You have completed nine quizzes for the marking period. The middle score of your quizzes is an 80, the most frequent score is a 75, and the lowest and highest scores have a difference of 30 points. What could be your scores for the marking period?</p>	<p>Student share experiences and/or solutions</p>	<p>9s-12</p>
<p>7:9) 10-NOV-2000 19:01 Marge Petit (mpetit)</p> <p>Leslie, Could you provide us with some examples of the approaches that students took?</p> <p>Great to see a fellow Vermonter participating in the program.</p> <p>Marge</p>	<p>Asks for Sharing of experiences</p>	<p>4s-4</p>
<p>7:10) 10-NOV-2000 22:34 Leslie Ercole (ercole)</p> <p>Marge,</p> <p>Some of my students started with a guess and check approach. They made nine dashes for each of the quiz scores and entered in the data from the problem which included the mode and the median. Then they would address the range, add up the numbers and divide by 9.</p>	<p>Factual Response</p>	<p>8f- 14</p>

Narrative	Analysis Categories	Code Line Count
<p>They were looking for a mean of 85. If it wasn't there, they would keep trying different numbers. Other students started with <math>9 \times 85 = 765</math>. They put in the numbers that they knew from the problem and then manipulated the remainder to answer the question. All of the students used numbers that ended in 0 or 5 to solve the problem.</p>		
<p>7:11) 12-NOV-2000 03:47 Christine Palmer (cmpalmer)</p> <p>Now, how about adapting their experience to spread sheets and their grades for the year? After the end of the first quarter, I take my students to the computer lab. We use a spread sheet to play "what if" with their grades for the year. To start with, we set up the spread sheet. Then, I have all students enter the same three or four specific scenarios. Next, they are required to create additional possible scenarios. Finally, they choose the grade they would like to earn for the year, and demonstrate how that might be possible. Afterwards, they write about their experience, and their goal for the year, and how they plan to attain it. (The biggest drawback to this approach is that a few students discover that, since they started off with a very solid foundation, gradewise, they may not have to work very hard for the rest of the year, to attain the minimum grade that would satisfy them...This is even more likely if the experience is repeated later in the year). Combined with the grade sheets that our team has our students maintain, this experience serves as a reality check, and helps the students to take personal responsibility for their learning.</p>	<p>Student talking to student</p>	<p>9t-26</p>
<p>7:12) 12-NOV-2000 10:07 Leslie Ercole (ercole)</p> <p>I used the activity to have students demonstrate their understanding of mean, median, mode, and range. This was an activity at the beginning of the year. We have since gone to a standards based system of grading where there are no numbers. Instead students are given information as to how they perform toward reaching the standards. Students are instead striving to meet or exceed the standards at all time throughout the year. I</p>	<p>Student talking to student</p>	<p>9t-12</p>

Narrative	Analysis Categories	Code Line Count
guess this portfolio piece became obsolete in a very short period of time!		
<p>7:14) 12-NOV-2000 21:22 Fred G. Harwood (fharwood)</p> <p>You've created a new category - paradox.</p> <p>How can the gap from largest to smallest be 8 inches when the gap from second largest to second smallest be 4 inches while the middle one is 12 inches from a side? There must be a typo in your problem.</p>	Student talking to student	9t-6
<p>7:15) 14-NOV-2000 15:41 Rick Norwood (rnorwood)</p> <p>Fred -- what would you do with the sawdust?</p> <p>Students often ask me, What do I need to make on the final to get a B in the course? I usually do the math for them, but their jaw drops when they see that</p> <p>a) this is a problem that can be solved without trial and error and b) you can actually do something useful with math</p>	Student talking to student	9t-9
<p>7:16) 15-NOV-2000 00:49 Fred G. Harwood (fharwood)</p> <p>You had me wondering where paradox and sawdust came together until I 'scrolled' back a few points.</p> <p>We live for teachable moments. One of the reasons I have resisted teaching the math 12 course with the provincial highstakes (40% + scholarship considerations) exam is that I don't want to say to students, "Now there is an excellent question, I wish we had time to uncover that today but "we" have 6 ILO's to cover today or you'll miss something that counts on your provincial exam."</p> <p>Do you show them statistics when one of your 206 students asks you after showing a makeup of a missed homework assignment, "what do I have now?" "Now, you have 7 courses to monitor and I have 206. Who do you think is more likely to have your running percentage in their head?"</p>	Student talking to student	9t-19
7:17) 15-NOV-2000 14:02 Rick Norwood (rnorwood)	Student talking to student	9t-17

Narrative	Analysis Categories	Code Line Count
<p>Fred- Do you have any data about this?</p> <p>Suppose two groups of students take the same high stakes exam. The first group has been drilled over and over on every concept that might turn up on the exam. The second group has spent the same total amount of time, but has spent only half of that time on drill, maybe only covering the most important half of the material that might be on the exam, and has spent the other half of the time on discussion, questions, and cooperative problem solving.</p> <p>Which group does better? In the long term, I am almost sure the second group will do better, as far as retaining and applying their knowledge. In the short term, just on that one exam, I don't know which group will do better.</p> <p>Any hard statistics?</p>		
<p>7:18) 15-NOV-2000 19:34 Fred G. Harwood (fharwood)</p> <p>No, I have no research to support it other than the test of time and "can 10 000 000 flies be wrong?"</p> <p>I know this happens as a rule. A quick anecdote. Some 12's asked me for help on logarithmic equations studying for their final. I asked, "why logarithmic equations?" "Duh, cause it's on the exam!" "No, why are their logarithmic equations? Where might you use them?" The two looked at me as if I weren't from the planet earth until one gasped, "We use them in chemistry!" Now the other girl at least focussed on somebody else dumbfoundedly until the light came on there, "Yeah, we do!" Then, I didn't need to help them with logarithmic equations!</p> <p>Yes, a problem solving, constructivist, deep course will produce mathematicians able to leap tall constructs and be able to remember it next year but, until the 'tests' are designed to be less time-dependent &amp; prior knowledge activated, the recall, short-term memory students will perform as well or better on these tests. (in my opinion)</p>	<p>Student talking to student</p>	<p>9t-24</p>

Narrative	Analysis Categories	Code Line Count
<p>7:19) 16-NOV-2000 14:35 Amy Puff (amypuff)</p> <p>Marge, you have asked for strengths and limitations regarding the various rubric types. Having taught fifth graders who have learning disabilities, attentional issues, and language difficulties, I sense that task specific rubrics offer better clarity and communication. They seem to be closest to what I have used successfully. In assessment, I want to be clear as to what demonstrates learning, and I want to have enough room for that learning to be expressed with reduced language, if pictures or manipulatives can show a concept (a major hurdle). With these students, I have found that the challenge is to unearth and credit them with what they know, yet with more talented students I find that I'm looking for more depth (in essence, what they don't know). Perhaps the latter of the two student types may reach for higher with a more general rubric. Thanks so much for getting me thinking about the "mix and match" of rubrics.</p>	Initiated Comment	9i-21
<p>7:20) 16-NOV-2000 14:50 Carole Bilyk (cbilyk)</p> <p>I think the first two types of rubrics - generalized holistic and generalized analytical are useful to teachers in creating the task specific rubric. For students, I believe we should strive to always give them a task specific rubric as they begin the exercise. Maybe students can help develop the task specific rubric from the generalized analytical rubric as they work on the problem. There certainly is lots of food for thought here!</p>	Student talking to student	9t-10

<b>Asks Convergent Questions</b>	<b>4c-15</b>
<b>Asks for Sharing of experiences</b>	<b>4s-5</b>
<b>Convergent Response</b>	<b>8c-8</b>
<b>Factual Response</b>	<b>8f- 14</b>
<b>Initiated Comment</b>	<b>9i-25</b>
<b>Student share experiences and/or solutions</b>	<b>9s-38</b>
<b>Student talking to student</b>	<b>9t-132</b>

**Workshop 4**

**Table # 99: Workshop 4, Item 1, Aligning Classroom Assessments to Standards**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 4: Aligning Classroom Assessments to Standards</p> <p>Aligning Classroom Assessments to Standards</p> <p>Tania Madfes, Senior Researcher at WestEd Co-author Learning from Assessment: Tools for Examining Assessment through Standards and Dilemmas in Professional Development: A case-based approach to improving practice</p> <p>You may read all the items or click on item titles listed below to read individual items.</p> <p>1 Workshop 4: Aligning Classroom Assessments to Standards 0 2 Introduction 2 3 Activity 1 14 4 Activity 2 5 5 Activity 3 3 6 Activity 4 2 7 Activity 5 3</p>		
<p>Workshop 4 Item 1</p> <p>[*] Mathweb 2000 Center, Workshop 4 , Item 1</p> <p>Workshop 4: Aligning Classroom Assessments to Standards</p> <p>Item 1 11-SEP-2000 20:45 Susan Doherty (squinnxx) Come back November 13th for Workshop 4: Aligning Classroom Assessments to Standards with Tania Madfes.</p> <p>Typically, we think of large-scale assessments as instruments to evaluate student achievement but somewhat removed from instruction. In many places these assessments are high-stakes for students and tied to accountability of schools and teachers. We seldom have the opportunity to examine the items and we rarely think much about what an examination of the items might tell us.</p> <p>In this workshop we will use an item released from a very large-scale assessment, TIMSS -</p>	Orientation Lecturing	50-15

Narrative	Analysis Categories	Code Line Count
the Third International Mathematics and Science Study - and we will explore how assessment relates to curriculum standards and instructional practice.		
<p>On to Workshop 4:</p> <p>[F] This item is frozen. No more responses may be added. Who has seen this item?</p> <p>[*] Mathweb 2000 Center, Workshop 4 , Item 1</p>		
Workshop 4 Item 1		

**Orientation Lecturing**

**50-15**

**Workshop 4**

**Table # 100: Workshop 4, Item 2, Response 2 Introduction**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 4 Item 2</p> <p>[*] Mathweb 2000 Center, Workshop 4, Item 2, Resp 2</p> <p>&lt;<a href="http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif">http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif</a>&gt; Introduction &lt;<a href="http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif">http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif</a>&gt;</p> <p>Item 2 12-NOV-2000 19:22 Susan Doherty (squinnxx) Introduction</p>		
<p>2:1) 12-NOV-2000 19:22 Tania Madfes (tmadfes)</p>		
<p>What comes to mind when you hear the words, "large-scale assessment"?</p> <p>Typically, we think of large-scale assessments as instruments to evaluate student achievement but somewhat removed from instruction. In many places these assessments are high-stakes for students and tied to accountability of schools and teachers. We seldom have the opportunity to examine the items and we rarely think much about what an examination of the items might tell us.</p> <p>In this workshop we wilons)e an item released from a very large-scale assessment, TIMSS - the Third International Mathematics and Science Study - and we will explore how assessment relates to curriculum standards and instructional practice.</p> <p>As we look at assessment through standards, four questions will help to guide our discussions:          What mathematical thinking would our students use on the assessment?          What standards does the assessment address?          Are we assessing what we think we are assessing?          How do we link the assessment to instruction?</p>	<p>Orientation Lecturing</p> <p>Factual Lecturing</p>	<p>50-15</p> <p>5f-9</p>

Narrative	Analysis Categories	Code Line Count
<p>2:2) 15-NOV-2000 16:42 Beth Paterson (bethpar)</p> <p>As I've wrestled with these questions, my first shift had to be to formative assessment. I check (Target Checks) daily, looking for progress and instructional direction. The state, texts, district, etc. provide ample summative assessment. But I have to do the daily sampling/observation/note taking to guide instruction. My students also are directed to computer programs which offer additional practice or actual instruction based on that Target Check information.</p>	Initiated Comment	9i-11

**Orientation Lecturing**  
**Factual Lecturing**  
**Initiated Comment**

**50-15**  
**5f-9**  
**9i-11**

**Workshop 4**

**Table # 101: Workshop 4, Item 3, Response 14, Activity 1**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 4 Item 3</p> <p>[*] Mathweb 2000 Center, Workshop 4 , Item 3 , Resp 14</p> <p>Activity 1  <a href="http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif">http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif</a>                      Item 3 12-NOV-2000 19:23 Susan Doherty (squinnxx)                      Activity 1</p>		
<p>3:1) 12-NOV-2000 19:26 Tania Madfes (tmadfes)</p> <p>Scenario</p> <p>You have been asked to help develop your district's middle school mathematics assessment. Your committee has been reviewing a collection of items from recent large-scale assessments, such as TIMSS and NAEP, to see if any of them might be useful. The reasons for considering these items are that they are available and the district would be able to compare student performance with the performance of thousands of other students around the world because that data is readily accessible.</p> <p>You come across the following item from TIMSS and it looks interesting, so you bring it to the attention of the entire group:</p> <p>Reproduced from TIMSS Population 2 Item Pool. Copyright ©1994 by IEA. The Hague/Original Item Number S-1a</p> <p>Here is a sequence of three similar triangles. All of the small triangles are congruent.</p> <p><a href="http://rheingold.caucus.com/~ra1/LIB/workshop_4/squinnxx/00030001/triangle2.gif">http://rheingold.caucus.com/~ra1/LIB/workshop_4/squinnxx/00030001/triangle2.gif</a>  <a href="http://rheingold.caucus.com/~ra1/LIB/workshop_4/squinnxx/00030001/triangle1.gif">http://rheingold.caucus.com/~ra1/LIB/workshop_4/squinnxx/00030001/triangle1.gif</a>  <a href="http://rheingold.caucus.com/~ra1/LIB/workshop_4/squinnxx/00030001/triangle4.gif">http://rheingold.caucus.com/~ra1/LIB/workshop_4/squinnxx/00030001/triangle4.gif</a></p>	<p>Asks Evaluative Questions</p>	<p>4e-51</p>

Narrative	Analysis Categories	Code Line Count						
<p>Figure 1</p> <p>Figure 2</p> <p>Figure 3</p> <p>a. Complete the chart by finding how many small triangles make up each figure.</p> <p>Figure Number of Small Triangles</p> <table> <tr> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td></td> </tr> <tr> <td>3</td> <td></td> </tr> </table> <p>b. The sequence of similar triangles is extended to the 8th Figure. How many small triangles would be needed for Figure 8?</p> <p>Activity 1: What mathematical thinking would our students use on the assessment?</p> <p>As committee chair, I suggest that everyone take a closer look at the item to see what is actually involved in working on it.</p> <p>You are asked to think about how an 8th grader would respond to this item and then to do the problem.</p> <p>After you finish working out the item, describe how you approached the problem; explain your mathematical thinking.</p> <p>How would you approach the problem?</p>	1	1	2		3			
1	1							
2								
3								
<p>3:2) 13-NOV-2000 11:22 Fred G. Harwood (fharwood)</p> <p>Language level: is fairly basic except for "The sequence of similar triangles is extended" "The pattern continues to grow until there are 8 figures. How many small triangles would be needed to make Figure 8?"</p> <p>Mathematical Thinking: counting, looking for a</p>	Factual Response	8f-20						

Narrative	Analysis Categories	Code Line Count
<p>pattern, possibly perfect squares or odd numbers.</p> <p>Gr. 8 Solution: Many would choose to extend the pattern by adding consecutive odd numbers until the chart reaches the 8th level instead of feeling the need to search out an easier way ie. the perfect squares of each level, thus <math>8^2 = 64</math></p> <p>Alternatives: Ask this question to assess one level and then ask a question c: How many small triangles would there be in Figure 89 if the pattern were to continue? and perhaps we could also ask: "Describe how you calculated the 89th figure's triangles in words."</p>		
<p>3:3) 13-NOV-2000 12:36 Fred G. Harwood (fharwood)</p> <p>A big sorry, I'm doing the later activities in the previous response. I didn't read the whole set to get the big picture of what we're doing first.</p>	Initiated Comment	9i-3
<p>3:4) 13-NOV-2000 12:43 Steve Crandall (scrandall)</p> <p>I started with interpreting the model (geometric). Continued by counting rows and evaluating totals (number sense) and entering these into a table (problem solving). Next, I looked for a pattern (algebraic thinking) and made predictions to check against more models (representation) and numbers in extending the table (inductive reasoning).</p>	Factual Response	8f-9
<p>3:5) 13-NOV-2000 16:15 Doug Gregg (greggdoug)</p> <p>This problem requires reading comprehension to begin and technical writing skills to conclude. The middle is math covering several strands as Steve showed in his task analysis. My question is why? Why would I want to put all those triangle together? Why would I want to do it eight times? I enjoy these academic brain teasers but my students don't. I have much</p>	Evaluative Response	9e-11

Narrative	Analysis Categories	Code Line Count
better luck getting students to use their abilities if there is a "real world" problem with practical application.		
<p>3:6) 14-NOV-2000 00:55 Lisa Netuschil (nts4ac)</p> <p>I agree with Steve, as an 8th grader I believe I would count the triangles and fill in the table and look for a pattern. I may even draw more triangles to see if my predictions were correct. As an 8th grader I might also read it, decide it was too hard and I didn't understand it, guess and move on. That is why I also agree with Doug. Why? Most 8th graders could care less and a "real world" problem would be more appropriate.</p>	Student talking to student	9t-10
<p>3:7) 14-NOV-2000 15:46 Rick Norwood (rnormwood)</p> <p>As Lisa says, the biggest problem would be getting the student to actually try the problem. On the other hand, many students enjoy puzzles are are bored by reality.</p>	Student talking to student	9t-4
<p>3:8) 15-NOV-2000 09:22 Susan A. Stuart (sues)</p> <p>I also think that we do a disservice to students when we only present mathematics in "real-life" contexts. I do not think that this is what is meant when constructivists encourage us to have the students creating their own understanding of mathematics. Mathematics in itself has beauty and symmetry. Students do enjoy the puzzles of number and shape. I have had many grade 4 - 8 students say "Wow, look what happened!" when they discover the patterns of 9, or explore what happens when they cut shapes apart and make new shapes - I often don't hear that when we try to hide the math, because we don't think they will like it.</p>	Student talking to student	9t-14
<p>3:9) 15-NOV-2000 16:24 Beth Paterson (bethpar)</p> <p>I have 4th graders who would love this challenge, can happily do the abstract pattern analysis! Middle school teachers should eagerly anticipate the "raised bar" in elementary levels!</p>	Student talking to student	9t-4

Narrative	Analysis Categories	Code Line Count
<p>3:10) 16-NOV-2000 10:47 Rick Norwood (rnorwood)</p> <p>Yes! Students love to learn. The biggest complaints I hear is that school is boring, because they spend all their class time either cutting up or waiting for the teacher to finish trying to reach the least motivated students.</p> <p>I tell my students, "Yes, math is difficult. You are young and smart and strong. You should be doing difficult things."</p>	Student talking to student	9t-8
<p>3:11) 16-NOV-2000 15:01 Carole Bilyk (cbilyk)</p> <p>As an activity in a math class, I could see lots of students being interested. As an item on an assessment, I'm not so sure.</p> <p>I agree with Steve (3.4) on the process. As soon as I saw the first two levels in the third iteration, I was set.</p>	Student talking to student	9t-6
<p>3:12) 16-NOV-2000 17:21 Tania Madfes (tmadfes)</p> <p>When I've done this activity with groups we've found that although the work may appear similar, strategies and mathematical thinking often differ.</p> <p>Typical approaches include the following:  Drawing out all eight figures and counting the resulting number of small triangles  Extending the last figure along the base five more times and counting the resulting small triangles up to the eighth figure  Extending the last figure along the height five more times and counting the resulting small triangles up to the eighth figure  Filling in the chart by extending it to include Figures 4 through 8 and recognizing the pattern is one of square numbers so that the 8th figure would have 64 small triangles  Filling in the chart and quickly recognizing the pattern is square numbers so that the 8th figure would have 64 small triangles  Extending the chart to include Figures 4 through 8 by recognizing the pattern is addition of consecutive odd numbers so that the 8th figure would result in 64 small triangles</p>	Factual Lecturing	5f-31

Narrative	Analysis Categories	Code Line Count
<p>Recognizing that figure 1 is a 1x1, figure 2 is 2x2, etc. and extending that pattern to find figure 8 is an 8x8 or 64</p> <p>Recognizing that this is similar to an area problem so that the base times the height will provide the number of small triangles and the 8th figure would thus have 8x8 or 64 small triangles</p> <p>After comparing our results, we see that a student could actually complete this item correctly using a variety of approaches. If this is so, then we wonder what we really would be able to use this item to assess? How could it help us in assessing how our students are meeting our mathematics standards?</p>		
<p>3:13) 16-NOV-2000 19:02 Steve Crandall (scrandall)</p> <p>I could add one more to those. Once a student mistakenly continued her pattern in such a way that she left off two top triangles in the fourth figure and only added five on the side for a total of 14, then she left off the top triangles in the fifth figure by adding only five to the side to get a total of 19, then on to the sixth figure for a total of 24, etc. She generalized that the triangle sums were alternating 4 and 9 in the final digit, and even came up with a generalized formula for the terms (admitting that the first two terms didn't fit!) Now that can be used to show some powerful mathematical thought, even if the pattern "generated" was unexpected. She certainly did her own work!</p>	Student talking to student	9t-15

<b>Asks Evaluative Questions</b>	<b>4e-51</b>
<b>Evaluative Response</b>	<b>9e-11</b>
<b>Factual Lecturing</b>	<b>5f-31</b>
<b>Factual Response</b>	<b>8f-29</b>
<b>Initiated Comment</b>	<b>9i-3</b>
<b>Student talking to student</b>	<b>9t-61</b>

**Workshop 4**

**Table # 102: Workshop 4, Item 4, Activity 2**

Narrative	Analysis Categories	Code Line Count
<p>Activity 2 &lt;<a href="http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif">http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif</a>&gt;</p> <p>Item 4 12-NOV-2000 19:30 Susan Doherty (squinnxx) Activity 2</p>		
<p>4:1) 12-NOV-2000 19:30 Tania Madfes (tmadfes)</p> <p>What standards does this item address?</p> <p>We aren't sure what standards this item really addresses and so we decide to go through our standards. We will spend some time reviewing our middle grades standards and see what the item addresses and then share what we have found.</p> <p>You are asked to review the Grade 6 - 8 Standards from Principles and Standards for School Mathematics and identify the Standards that you think this item addresses. During your review of the Standards, keep in mind the various types of mathematical thinking that students might use to complete the item as a way to support your analysis.</p> <p>Post the Standards you think the item addresses and provide a rationale for your selection by referring to what mathematical thinking a student would be using to complete the item that would provide evidence of meeting the standard.</p> <p>Note: You will need to refer to NCTM's Principles and Standards for School Mathematics. If you do not have a copy of this document, you can access the entire document at NCTM Standards</p> <p>or you can access a condensed version of the middle grades standards here: WestEd</p> <p>What Standards would make your list and why?</p>	<p>Asks Evaluative Questions</p>	<p>4e-30</p>
<p>4:2) 13-NOV-2000 12:32 Fred G. Harwood</p>		<p>8f- 37</p>

Narrative	Analysis Categories	Code Line Count
<p>(fharwood)</p> <p>Number &amp; Operations: A6: use factors, multiples, prime factorization, &amp; relatively prime numbers to solve problems.</p> <p>If students break the number of triangles down into their pieces to then recognize the perfect squares that go with the Figure number.</p> <p>Algebra: A1: represent, analyze, and generalize a variety of patterns with tables, graphs, words, and when possible, symbolic rules;</p> <p>Definitely patterns but we indicated that a table was to be used instead of leaving the choice to them, some might go to symbolic from prior knowledge of solving patterns this way and seeking out the general term. They really haven't been called upon to express their ideas in words or symbols and with only 8 levels called for it might be easier just to extend the pattern 5 more times. 1, 4, 9, <math>(9+7)=16</math>, <math>(16+9)=25</math>, <math>(25+11)=36</math>, <math>(36+13)=49</math>, <math>(49+15) = 64</math></p> <p>Problem Solving: A: Build new mathematical knowledge through problem solving</p> <p>Only if they haven't done this question before, or studied perfect squares to see that they are generated by the addition of consecutive odd numbers. This is a common type of counting pattern and may just be prior knowledge.</p> <p>Communication: A: Organize and consolidate their mathematical thinking through communication. B: Communicate their mathematical thinking coherently and clearly to peers, teachers and others; D: Use the language of mathematics to express mathematical ideas precisely.</p> <p>These will only be demonstrated through those students trained to answer open response questions with this detail. The wording of the problem does not indicate this is needed but it would be nice to bring this standard into play</p>	<p>Factual Response</p>	

Narrative	Analysis Categories	Code Line Count
(assessment)		
<p>4:3) 13-NOV-2000 12:56 Steve Crandall (scrandall)</p> <p>The middle grades standards include:</p> <p>Geometry - use visualization, spatial reasoning, and geometric modeling to solve problems;</p> <p>Algebra - understand patterns, relations, and functions;  - use mathematical models to represent and understand quantitative relationships;</p> <p>Number Sense - compute fluently and make reasonable estimates;</p> <p>Problem Solving - build new mathematical knowledge through problem solving;  - apply and adapt a variety of appropriate strategies to solve problems;</p> <p>Representation - create and use representations to organize, record, and communicate mathematical ideas;</p> <p>Reasoning - select and use various types of reasoning and methods of proof.</p>	Factual Response	8f- 16
<p>4:4) 14-NOV-2000 15:47 Rick Norwood (rnorwood)</p> <p>Let's not forget the most important standard of all: the ability to read and understand what you are reading.</p>	Student talking to student	9t-3
<p>4:5) 16-NOV-2000 17:23 Tania Madfes (tmadfes)</p> <p>At WestEd we use something called the "eye test" where we can ask whether a student's response to the assessment item would provide us with enough evidence to: look a parent in the eye and say that based on the evidence their child had not met the standard, or look the next teacher in the eye and say that based on the evidence, the student had met the standard.</p>	Personal Lecturing	5P-9

**Asks Evaluative Questions**  
**Factual Response**  
**Personal Lecturing**  
**Student talking to student**

**4e-30**  
**8f-53**  
**5P-9**  
**9t-3**

**Workshop 4**

**Table # 103: Workshop 4, Item 5, Gives Directions**

Narrative	Analysis Categories	Code Line Count
<p>[*] Mathweb 2000 Center, Workshop 4, Item 5, Resp 3</p> <p>Activity 3 &lt;<a href="http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif">http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif</a>&gt;</p> <p>Item 5 12-NOV-2000 19:31 Susan Doherty (squinnxx) Activity 3</p>		
<p>5:1) 12-NOV-2000 19:31 Tania Madfes (tmadfes)</p> <p>Are we assessing what we think we are assessing?</p> <p>Look at each of the standards that have been posted along with the associated rationale of a student's mathematical thinking. Apply the "eye test" to each of these. Would there be enough evidence of student mathematically thinking for you to feel comfortable using the "eye test" criteria? Would you be confident that each student who supplied a correct response had used the same mathematical thinking so that you could conclude that the standard had been met? Are there ways that this item might be modified so that you could have a high degree of confidence that the item was assessing the standard and that the alignment between the item and the standard would be strong enough to pass the "eye test"?</p> <p>Share your analysis of the standards with the group. Explain what modifications you might make to the assessment item and why you would make those changes.</p> <p>What do you think?</p>	<p>Gives directions: physical action on the part of the learner</p>	<p>6-23</p>
<p>5:2) 15-NOV-2000 16:32 Beth Paterson (bethpar)</p> <p>This is where math journals and de-briefings really come in handy. Students can describe their thought process and share it in small groups. By listening in, more information is</p>	<p>Convergent Response</p>	<p>8c-6</p>

Narrative	Analysis Categories	Code Line Count
available than just the right answer, which is relatively less important.		
<p>5:3) 16-NOV-2000 17:26 Tania Madfes (tmadfes)</p> <p>Modifying the item to better align it to the standard is one way to be more confident that you would assess what you think you are assessing. Adding one more step to the item that asks the students how many small triangles there would be in the nth figure because they would have to generalize their thinking. In this way, the basic TIMSS item with an alteration is one way to assess whether students could represent, analyze, and generalize a variety of patterns with tables, graphs, words, and when possible, symbolic rules.</p>	Formulates directions for learning	3f-12

**Convergent Response**

**Formulates directions for learning**

**Gives directions: physical action on the part of the learner**

**8c-6**

**3f-12**

**6-23**

**Workshop 4**

**Table # 104: Workshop 4, Item 6, Teacher Talk Asks Evaluative Questions**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb 2000 Center, Workshop 4, Item 6 , Resp 2</p> <p>Item 6 12-NOV-2000 19:32 Susan Doherty (squinnxx) Activity 4</p>		
<p>6:1) 12-NOV-2000 19:32 Tania Madfes (tmadfes)</p> <p>How do we link the assessment to instruction?</p> <p>The discussions we have had about this one assessment item lead us to consider the assumptions we have about what students know and can do. We begin to talk about the mathematical knowledge and vocabulary students need in order to even attempt the item.</p>	Asks Evaluative Questions	4e-31

Narrative	Analysis Categories	Code Line Count
<p>We brainstorm a list of knowledge and vocabulary leading up to this item. You are asked to generate your list for the group.</p> <p>Then we realize that in addition to the mathematical knowledge and vocabulary we identified, that students need to have specific learning experiences prior to attempting an item like this and we spend some time discussing what they should be. One of the participants says that students should use pattern blocks. Someone else clarifies that a learning experience is more generalized than a specific manipulative or resource and offers as an example, "Students have experience with a variety of visual and numerical patterns and sequences." Now that we have a clearer idea of what a learning experience is we begin to generate those we think are required for meeting the standard as evidenced by this particular assessment item.</p> <p>What would be on your knowledge and vocabulary list? What learning experiences?</p>		
<p>6:2) 16-NOV-2000 15:26 Carole Bilyk (cbilyk)</p> <p>On my vocabulary list:  sequence  similar triangles  congruent</p>	Factual Response	8f-4

**Asks Evaluative Questions**  
**Factual Response**

**4e-31**  
**8f-4**

**Workshop 4**

**Table # 105: Workshop 4, Item 7, Activity 5 Retracing Our Steps**

Narrative	Analysis Categories	Code Line Count
<p>Activity 5 &lt;<a href="http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif">http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif</a>&gt;</p> <p>Item 7 12-NOV-2000 19:33 Susan Doherty (squinnxx) Activity 5</p>		
<p>7:1) 12-NOV-2000 19:34 Tania Madfes (tmadfes)</p> <p>Retracing our steps</p> <p>This meeting of our committee turned out to be a really long one but we thought it was a good one. We shared what we had accomplished: We started out just looking at one item from a large-scale assessment - from its face value to the mathematical thinking required to complete it - to determine if it would be a good indicator of meeting our needs.</p> <p>We then looked at the item through the lens of standards and generated a list of potential standards the item might address.</p> <p>Then we aligned the item with our standards by modifying it so we could have confidence in the evidence it would provide.</p> <p>We briefly reviewed the implications for our instructional program, taking into consideration the knowledge, vocabulary, and student experiences needed for success.</p> <p>The group's chair then asked if we would share anything we were thinking about differently because of our experiences.</p> <p>Please share your responses</p>	<p>Asks for Sharing of experiences</p>	<p>4s-23</p>
<p>7:2) 16-NOV-2000 02:29 Lisa Netuschil (nts4ac)</p> <p>Yes, this is an extremely difficult process. For each problem, there are so many variables that have to be reviewed. First, a problem has to meet standards. Second, the problem has to</p>	<p>Student talking to student</p>	<p>9t-9</p>

Narrative	Analysis Categories	Code Line Count
<p>be written correctly using vocabulary that the students are familiar with. Third, the students should have experience with concepts that make up the problem. Fourth, how will the students view the problem.</p>		
<p>7:3) 16-NOV-2000 07:07 Steve Crandall (scrandall)</p> <p>Implications for the instructional program would include vocabulary and concept development of similarity, series, nth term, inductive processes, and more. This type of problem should get 4 points on a scale of 1-4 because it is open-ended and requires written explanations. Perhaps, instead of modifying the problem, address where and when it is to be used for assessing student abilities versus teaching scope and sequence. Using this early in the year gives me more direction as a teacher for the whole class; and then, using a similar problem later in the year gives me more information about growth in individual student abilities.</p>	<p>Student talking to student</p>	<p>9t-15</p>

Student talking to student  
Asks for Sharing of experiences

9t-24  
**4s-23**

**Workshop 5**

**Table # 106: Workshop 5, Item 1, Technology & Assessment:**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb 2000 Center, Workshop 5 Technology and Assessment: How do they fit together?</p> <p>Dave Barnes Director of Electronic Resources at the National Council of Teachers of Mathematics</p> <p>You may read all the items or all the new material, or click on item titles listed below to read individual items.</p> <p>1 Workshop 5: Tech &amp; Assessment      0 2 Introduction                                      1 3 Discussion 1                                      16</p>		
<p>Workshop 5: Technology and Assessment</p> <p>Item 1 11-SEP-2000 20:45 Susan Doherty (squinnxx)</p> <p>Workshop 5 with Dave Barnes, Technology and Assessment: How do they fit together? Now open!</p> <p>What can we learn about students while they are holding a calculator or sitting in front of a computer? This session will explore a wide range of issues associated with assessing students when they have access to technology.</p> <p>Dave Barnes is a mathematics educator and the Director of Electronic Resources at the National Council of Teachers of Mathematics (NCTM). Dave came to NCTM in February and assisted in the final production of the E-Standards Web site and CD and now is working to move NCTM toward becoming an e-Council. Prior to NCTM, Dave was at the University of Missouri and involved in preservice and inservice teacher education, the content developer for the first year of the PBS Mathline Web site, and directed the design and development of the Show-Me Center and Figure This! Web sites. Workshop 5 Item 2 Technology and Assessment: How do they fit together?</p>	<p>Orientation Lecturing</p>	<p>50-25</p>

**Orientation Lecturing**

**50-25**

**Workshop 5**

**Table # 107: Workshop 5, Item 2 Introduction, Factual Lecturing**

Narrative	Analysis Categories	Code Line Count
<p>[*] Mathweb 2000 Center , Workshop 5 , Item 2 , Resp 1</p> <p>Introduction  <a href="http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif">http://rheingold.caucus.com/~ra1/GIF41/clearpix.gif</a>            Item 2 14-NOV-2000 09:58 Susan Doherty (squinnxx)</p>		
<p>2:1) 14-NOV-2000 10:00 Dave Barnes (dbarnes)</p> <p>Workshop 5: Technology and Assessment: How do they fit together?</p> <p>Technology and assessment are both very broad categories with considerable variability with respect to what each term means. What should we consider as “technology”?</p> <p>Depending on the situation it may include calculators, and graphing calculators. With the development of more powerful and smaller computers, the once distinctive difference between a calculator and computer are now starting to blur. At the other end of the spectrum some purists would say that the pencil is a form of technology and in its day similar discussions were held on the use of the pencil.</p> <p>Assessment, though sometimes equated with testing, has multiple purposes. The Assessment Standards for School Mathematics (NCTM, 1995), defines four key purposes:</p> <ul style="list-style-type: none"> <li>- Monitoring Students’ Progress</li> <li>- Making Instructional Decisions</li> <li>- Evaluate Students’ Achievement</li> <li>- Evaluating Programs</li> </ul> <p>These purposes are linked to four key results as portrayed in the figure from the Assessment Standards (p. 25).</p>	<p>Factual Lecturing</p>	<p>5f-35</p>

Narrative	Analysis Categories	Code Line Count
<p>&lt;<a href="http://rheingold.caucus.com/~ra1/LIB/presenter_greenroom/dbarnes/00140008/image001.gif">http://rheingold.caucus.com/~ra1/LIB/presenter_greenroom/dbarnes/00140008/image001.gif</a>&gt;</p> <p>In this workshop, it is my hope that we engage in some exploration and discussion of settings where aspects of technology and assessment come together.</p>		

**Factual Lecturing**

**5f-35**

**Workshop 5**

**Table # 108: Workshop 5, Item 3, Discussion 1**

Narrative	Analysis Categories	Code Line Count
<p>Workshop 5 Item 3 Mathweb 2000 Center , Workshop 5 , Item 3 , Resp 16</p> <p>Discussion 1</p> <p>Item 3 14-NOV-2000 10:02 Susan Doherty (squinnxx) Discussion 1</p>		
<p>3:1) 14-NOV-2000 10:02 Dave Barnes (dbarnes)</p> <p>Discussion 1: Calculators in High Stakes Testing: AP Calculus</p> <p>The College Board was one of the early organizations to integrate calculators into high-stakes national assessment.</p> <p>The AP Calculus program is designed to evaluate students' achievement relative to calculus. Many universities and colleges recognize students with appropriate scores by awarding them credit for one or more calculus classes. It is not uncommon for assessment activities to focus on skill development and recall of facts. However the philosophy of AP Calculus are much more far reaching. The Advance Placement Course Description: Calculus (College Board, 2000) describes the philosophy as:</p> <p>Calculus AB and Calculus BC are primarily concerned with developing the students' understanding of the concepts of calculus and providing experience with its methods and applications. The courses emphasize a multi-representational approach to calculus, with concepts, results, and problems being expressed geometrically, numerically, analytically, and verbally. The connections among these representations also are important. ...</p> <p>Broad concepts and widely applicable methods are emphasized. The focus of the courses is neither manipulation nor memorization of an</p>	<p>Factual Lecturing</p> <p>Asks Evaluative Questions</p>	<p>5f-61</p> <p>4e-6</p>

Narrative	Analysis Categories	Code Line Count
<p>extensive taxonomy of functions, curves, theorems, or problem types. Thus, although facility with manipulation and computational competence are important outcomes, they are not the core of these courses.</p> <p>Use of Technology on AP Calculus Exams</p> <p>Currently the AP Calculus Exam requires has four components: Two multiple-choice sections and two free-response sections. One of the multiple-choice section and one of the free-response sections requires access to a graphing calculator and the other must be done without the use of calculators.</p> <p>Multiple Choice Time</p> <p>Part A: No Calculators            28 Questions 55 Minutes</p> <p>Part B: Calculator Required       17 Questions 50 Minutes</p> <p>Free Response</p> <p>Part A: Calculator Required       3 Questions 45 Minutes</p> <p>Part B: No Calculators            3 Questions 45 Minutes</p> <p>The College Board discussion of the exams and the Use of Graphing Calculators provide further elaboration.</p> <p>Consideration of Questions and Technology.</p> <p>A number of years ago a colleague took a Calculus I final exam, not an AP Exam, from a major university and directly entered the questions into Maple and Mathematica to see how they would score. Both were able to generate scores in the B range. With a little interpretational understanding of the question, both were able to generate scores in the low 90's.</p> <p>Some multiple-choice and free response questions are available for us to discuss. The free response questions are available for 2000, 1999, and 1998. The free response are available within the PDF of the Calculus</p>		

Narrative	Analysis Categories	Code Line Count
<p>Description starting on page 24.</p> <p>Your Turn:</p> <p>What do you think of this use of technology in assessment.</p> <p>Why do the calculator multiple choice have fewer questions and the same amount of time?</p> <p>Is this fair? equitable?</p>		
<p>3:2) 14-NOV-2000 11:06 Fred G. Harwood (fharwood)</p> <p>I strongly believe in using technology appropriately because I no longer use my six sliderules.</p> <p>In BC, when we first insisted on graphing calculators for 15% of the exam, the powers-that-be also allowed an extra 25 minutes for students to write the whole exam. It was generally believed to be a fudge factor for those students not as familiar with the technology as other students and was included for equity factors. I start my students out in Gr. 8 and up working frequently with TI-83s so that they'll be really comfortable by the time they are required to use it in Gr. 12.</p> <p>I feel once that this technology is as accepted as the scientific calculator has become, the time factors will go the other way. It was only a few years ago that I noticed one teacher replacing many statistics questions with rational number operations. I pointed out to this teacher the a b/c key on most calculators and he said, "If I don't know about it, the kids won't." I also showed him one student with 10% in the math 9 course getting 15/16 on the rational number unit because he could use his calculator effectively. We need to train up our teachers to be comfortable.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-27</p>
<p>3:3) 14-NOV-2000 15:56 Rick Norwood (rnorwood)</p> <p>Here is a question I asked one of my classes:</p> <p>Give an example of a real world problem in</p>	<p>Student share experiences and/or solutions</p>	<p>9s-15</p>

Narrative	Analysis Categories	Code Line Count
<p>which you would "do the math" in your head, but would not use pencil and paper or a calculator. Give an example of a real world problem where you would "do the math" with pencil and paper, but would not use a calculator. Give an example of a real world problem where you would "do the math" with a calculator, but would not do the math if a calculator were not available. Give an example of a real world problem where you would "do the math" on a computer rather than a calculator.</p>		
<p>3:4) 15-NOV-2000 00:24 Fred G. Harwood (fharwood)</p> <p>a) socks are \$5.49 per package but are offered at 20% off. What would I need to have for two packages with 14% tax.</p> <p>b) I'm cutting a 4 x 8' sheet of plywood into five 8' long shelves. How wide will each shelf be if the saw cut and sanding takes 1/4" per cut.</p> <p>c) I've played 43 hands of bridge tonight and didn't like the cards I was getting. I had recorded the points in each hand I had and was now wanting to do some analysis of their measures of central tendency.</p> <p>d) I'm buying a \$7000 car on 2.6% interest compounded monthly, if the purchase is going to have 14% tax added on and the payments are to be arranged in 36 monthly installments, what would I be paying per month and how much would the final payment be?</p>	<p>Student share experiences and/or solutions</p>	<p>9s-18</p>
<p>3:5) 15-NOV-2000 14:08 Rick Norwood (rnorwood)</p> <p>Thanks for playing the game. Personally, I would do all four of those on my HP 48GX. Here are some of my favorite answers that I've gotten from students.</p> <p>a) I'm on a date, and I calculate the tip in my head to impress my date.</p> <p>b) I'm trying to figure out if I have enough money to buy a calculator.</p> <p>c) I need the square root of 2 to three decimal places.</p>	<p>Student share experiences and/or solutions</p>	<p>9s-12</p>

Narrative	Analysis Categories	Code Line Count
d) I want to update the position of an animated object 64 times each second.		
<p>3:6) 15-NOV-2000 18:59 Fred G. Harwood (fharwood)</p> <p>Most kids would not be caught dead pulling out a graphing calculator in the middle of a sock department, especially if it K-mart etc. The trick, like in you're "a)" is to do while looking cool the whole time.</p> <p>"What, like is "d)" math or somethin???"</p>	Student talking to student	9t-6
<p>3:7) 16-NOV-2000 10:51 Rick Norwood (rnorwood)</p> <p>Believe it!</p>	Student talking to student	9t 01
<p>3:8) 16-NOV-2000 15:40 Carole Bilyk (cbilyk)</p> <p>One problem with using technology on province (or state)wide assessments (or any high stakes testing) is the question of fairness and equity.</p> <p>Fred, are graphing calculators required or permitted? Have all students got access to graphing calculators for the exam time? for the course? Does having a graphing calculator always give you an advantage? How do you design questions when graphing calculators are allowed? These are all questions that I am struggling with. Any help?</p>	Student talking to student	9t-12
<p>3:9) 16-NOV-2000 19:08 Fred G. Harwood (fharwood)</p> <p>Required, but, each district must deal with equity their own way. Our school has about 160ish TI's and many students bought their own. Many 12's 'rented' a school machine (left a safety deposit and bought their own batteries). For the course it depends on the teacher. Most have them available on desktops or on loan to students so all use them frequently during the course. Some questions can test math content instead of calculator know-how but the more know-how you got, the more efficient some solutions can be had. I've come across many more clever ways to do</p>	Student talking to student	9t-17

Narrative	Analysis Categories	Code Line Count
<p>problems than the textbooks but by introducing an extra variable, or extending the size or . . . you can get back to the real math concepts. Have you some more specific worries?</p>		
<p>3:10) 16-NOV-2000 19:35 Steve Crandall (scrandall)</p> <p>Last summer at the high school, I had three students taking Algebra II for grade forgiveness (also 20 other Geometry and Algebra I students in the same room, but I digress). The Algebra II students wanted to spend all of their time planning on programming and working the buttons of their TI82's to solve the problems that I tried to show them could be done in their head or by inspection. They would listen patiently to my explanations, and then ask for the programming alternatives. Since use of the calculators was indeed par for the course, and the time-frame so ungenerous, I had to allow their technological preferences. But I didn't like it.</p>	<p>Student talking to student</p>	<p>9t-15</p>
<p>3:11) 16-NOV-2000 23:26 Leslie E.J. Nielsen (lejnielsen)</p> <p>An interesting parallel.... I sometimes give "group" quizzes and tests. A group test is similar to the AP calculator required test in that it usually has fewer questions than a standard test. The calculator and/or having group members to work with allows me to ask students to do more in depth mathematical thinking, which will take them longer. Often there are more solution pathes in these problems, and the students need time to explore them, choose the best one, and possibly explain why they made that cho</p>	<p>Student talking to student</p>	<p>9t-12</p>
<p>3:12) 17-NOV-2000 09:31 Rick Norwood (rnorwood)</p> <p>How many machine graded standards tests have hanging chads? None? Then why don't polling places use scantrons?</p>	<p>Student talking to student</p>	<p>9t-3</p>
<p>3:13) 17-NOV-2000 10:46 Steve Crandall (scrandall)</p> <p>Citrus County, Florida, used scantrons for</p>	<p>Student talking to student</p>	<p>9t-3</p>

Narrative	Analysis Categories	Code Line Count
voting - results were posted within one hour of the close of the polls!!		
<p>3:14) 17-NOV-2000 13:42 Doug Gregg (greggdoug)</p> <p>I have supported the use of calculators for my students in the accelerated math classes and in my remedial classes. In the accelerated classes I try to be sure that students understand the process and then use the technology to speed up the process and allow for alternative interpretations of data and in depth analysis. I encourage remedial students to learn to use the technology to gain survival skills. I work with some students who are not able to solve the K-mart problem except with a calculator. We, as math teachers, often take for granted mastery of basic concepts. I work with students everyday who exert 100% effort and never master them. Should we deny them the ability to solve problems? Should we deny them a diploma?</p>	Student talking to student	9t-17
<p>3:15) 17-NOV-2000 17:27 Jim Willis (jwillis)</p> <p>I feel very strongly that if a kid has not mastered the basics by high school, it is probably too late for us to make it happen. The appropriate technology puts these kids on a level playing field and allows them to explore and learn with confidence. In many cases I have found that kids that have been complete duds in math began to excel with the proper use of tech. In a few cases they go by the so called "smart kids". A lot of it seems to have to do with their confidence. It is amazing what a kid can do when he/she realizes he/she is not "stupid".</p>	Student talking to student	9t-12
<p>3:16) 19-NOV-2000 20:44 Janet Dzienisiewski (janet)</p> <p>I agree with you, Jim. I found that technology peaks the interests of students who have always had a difficult time in math, and perhaps aids them in staying on task longer as well bolstering their confidence.</p>	Student talking to student	9t-5

**Asks Evaluative Questions**  
**Factual Lecturing**  
**Student share experiences and/or solutions**  
**Student talking to student**

**4e-6**  
**5f-61**  
**9s-72**  
**9t-103**

**Greenroom**

**Greenroom**

**Table # 109: Greenroom, Item 4, Marketing**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb2000 Greenroom Item 4 Mathweb 2000 Center, Mathweb2000 Greenroom, Item 4</p> <p>Marketing Item 4 11-AUG-2000 14:54 Lisa Kimball (lisa) Stuff related to marketing (near term, a la the ad)</p>	<p>Convergent response</p>	<p>8c-4</p>
<p>4:1) 11-AUG-2000 17:24 Susan Doherty (squinnxx) From Carey: 3. I was thinking that the ad might have a little more zip. Some of the comments Lisa made at our meeting sounded great if we can capture them...Like Join the FIRST MATH ONLINE CONFERENCE EVER!!! MATH WEB 2000 attend a conference without ever having to leave your home. Available anytime as often as you want. Oct 30 - Nov 17. Assessment: Benchmarks for Success - then a description of the program and speakers. The URL is really important to find out more information and to register.</p>	<p>Diagnoses learning needs</p>	<p>3d-13</p>
<p>4:2) 11-AUG-2000 17:25 Susan Doherty (squinnxx) NCTM Article for Sept. Bulletin: Online Math Conference September NB, 8/7/00, draft 2 MathWeb2000 Join the Conversation For the first time ever, you can attend a full mathematics conference complete with keynote speakers, roundtable discussions, and workshops through your computer. Thanks to a partnership among Hewlett- Packard, NCTM, and PBS, the annual MathWeb online conference series will be launched this fall. This inaugural conference will focus on "Assessment: Benchmarks for Success," and will take place 31 October through 17 November. Registration is \$20. For more information on registration, please see future News Bulletins or check NCTM's Web site, nctm.org; or register online at</p>	<p>Designs pattern of learning experiences</p>	<p>3D.-18</p>

Narrative	Analysis Categories	Code Line Count
<a href="http://www.groupjazz.com/mathweb2000">www.groupjazz.com/mathweb2000</a> .		
<p>4:4) 07-SEP-2000 14:16 Susan Doherty (squinnxx)            Help spread the word! This exciting event for mathematics educators is coming soon! Email or post the following paragraph:</p> <p>Mathweb2000 is coming to you. The first-ever 100% Web-based mathematics conference hits your browser October 30-November 17. The theme for Mathweb2000 is "Assessment: Benchmarks for Success." Engage in open dialogue with educators representing elementary, middle, and secondary levels. Sponsors include NCTM, PBS, Hewlett-Packard, Modeling Middle School Mathematics (MMM), and the Show-Me Center. Visit <a href="http://www.groupjazz.com/mathweb2000">http://www.groupjazz.com/mathweb2000</a> for details and register today!</p> <p>Sponsor and exhibitor opportunities are also available. Visit our web site for details or contact <a href="mailto:math@groupjazz.com">math@groupjazz.com</a>.</p> <p>Thank you,            Susan Doherty            Group Jazz, Inc            5335 Wisconsin Ave, NW, Ste 440            Washington, DC 20015            202.686.4848 x849  <a href="mailto:susan@groupjazz.com">susan@groupjazz.com</a></p>	Designs pattern of learning experiences	3D.-22

**Convergent response**  
**Designs pattern of learning experiences**  
**Diagnoses learning needs**

**8c-4**  
**3D.-40**  
**3d-13**

**Greenroom**

**Table # 110: Greenroom, Item 5, Registration and Payments**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb2000 Greenroom Item 5 Mathweb 2000 Center, Mathweb2000 Greenroom, Item 5</p> <p>Registration and payments: Item 5 14-AUG-2000 09:44 Lisa Kimball (lisa) I got the materials from charge.com so we should be set soon vis-a-vis being able to take credit card payments.</p> <p>I'm going to try to talk with Ray today to find out what we need to know about registration on the rheingold system</p>	<p>Student Name/city ID preface and/or solutions</p>	<p>9s-8</p>
<p>5:1) 14-AUG-2000 09:45 Lisa Kimball (lisa) We need to find out from Carey what elements he wants to include in the registration form ... Mathweb2000 Greenroom</p>	<p>Convergent response</p>	<p>8c-3</p>

**Student Name/city ID preface and/or solutions**  
**Convergent response**

**9s-8**  
**8c-3**

**Greenroom**

**Table # 111: Greenroom, Item 6, Keep Me Informed**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb 2000 Center, Mathweb2000 Greenroom, Item 6</p> <p>Keep Me Informed</p>		
<p>Item 6 11-SEP-2000 13:41 Susan Doherty (squinnxx) Keep me informed messages will go out to that list each Monday.</p>	<p>Accepts, clarifies student feelings</p>	<p>1-2</p>
<p>6:1) 11-SEP-2000 13:41 Susan Doherty (squinnxx) 9.11.00</p>	<p>Orientation lecturing</p>	<p>5O-19</p>

Narrative	Analysis Categories	Code Line Count
<p>Mathweb2000 registration is open! And word is starting to spread about this exciting event for educators.</p> <p>If you haven't seen the program, visit <a href="http://www.groupjazz.com/mathweb2000">http://www.groupjazz.com/mathweb2000</a> for details on keynotes, panel sessions, workshops, and presenters. Opportunities for sponsors and exhibitors are available there as well.</p> <p>We would like to thank our initial sponsors, NCTM, PBS, HP, MMM, and the Show-Me Center for joining us in this endeavor. We will continue to keep you informed about Mathweb2000 including registration numbers, exhibitors, and program updates.</p> <p>Feel free to send comments or questions to <a href="mailto:math@groupjazz.com">math@groupjazz.com</a> Group Jazz and Bolster Education</p>		
<p>6:2) 18-SEP-2000 10:29 Susan Doherty (squinnxx) 9.18.00 BUZZ! This event has got it. The news is spreading about this exciting online event and interest has skyrocketed.</p> <p>Joining us for keynote sessions are Phillip Daro, New Standards Project, and Jan de Lange, the Freudenthal Institute - Research Group on Mathematics Education in the Netherlands.</p> <p>In addition to presenter sessions, Mathweb2000 will feature a welcome center, bookstore and resource center, and a cafe for participant interaction.</p> <p>Look for our full page ad in the October NCTM Elementary, Middle, and High School Journals. Feel free to send comments or questions to <a href="mailto:math@groupjazz.com">math@groupjazz.com</a>. Group Jazz and Bolster Education</p>	Orientation lecturing	50-18

**Accepts, clarifies student feelings**  
**Orientation lecturing**

**1-2**  
**50-37**

**Greenroom**

**Table # 112: Greenroom, Item 7, Education in the News**

Narrative	Analysis Categories	Code Line Count
<p>Mathweb2000 Greenroom Item 7 Education in the News</p> <p>Item 7 12-SEP-2000 14:23 Susan Doherty (squinnxx) Possible material for cafe/resources</p>	<p>Factual lecturing</p>	<p>5f-3</p>
<p>7:1) 12-SEP-2000 14:23 Susan Doherty (squinnxx) To view the entire article, go to <a href="http://www.washingtonpost.com/wp-dyn/articles/A50046-2000Sep11.html">http://www.washingtonpost.com/wp-dyn/articles/A50046-2000Sep11.html</a></p> <p>A Lesson Plan Written by Industry Chris Kozlowski, 16, has always enjoyed tinkering on his computer: adding extra memory and 3-D cards, trying to get it to run faster without putting out a bundle of money for new parts.</p> <p>So when he heard that Prince William County was opening a high school this fall that would offer classes in how to build, design and maintain computer networks, he decided to transfer there.</p> <p>The new high school, Forest Park, is the county's first to specialize in information technology. Forest Park students will work toward a standard high school diploma and be required to take just as many courses in traditional subjects as their counterparts in other Prince William schools. But they also will have the opportunity to take classes in computer networking and digital media--classes designed not by county educators but by technology companies such as Cisco Systems Inc. and Microsoft Corp.</p> <p>If they complete the training program, the students will receive industry certification. Kozlowski is a student in the school's Cisco Academy and hopes to graduate as a "Cisco certified network associate."</p> <p>Forest Park is the latest example of how large tech companies are forging bonds with schools</p>	<p>Factual lecturing</p>	<p>5f-148</p>

Narrative	Analysis Categories	Code Line Count
<p>that go far beyond donating computers and showing up on Career Day. Increasingly, companies are taking an aggressive role in creating a curriculum, training teachers and developing materials that school administrators can take to their school boards to get the courses approved for credit.</p> <p>The companies say that everyone benefits. Students get training in skills that are vital in the new economy; schools get a cutting-edge technology education program at minimal expense; and the tech businesses stand to gain workers at a time when the industry has hundreds of thousands of job openings.</p> <p>But some educators are wary of the trend, saying that narrow, employer-designed courses might be inconsistent with a high school's mission to provide students with a balanced curriculum.</p> <p>"The students may be trained in the technology of the company. But what happens if the technology changes, or if they don't fit into the company, or the company is sold?" said Harvard University education professor and author Howard E. Gardner. "The students may have a skill or a knowledge set that is way too specific and becomes outmoded or irrelevant shortly."</p> <p>Paul Hill, research professor of public affairs and director of the Center on Reinventing Public Education at the University of Washington in Seattle, said he believes technology companies must become more involved in education. But they must strive to give students a broad foundation that will prepare them for a wide range of tech jobs, Hill said.</p> <p>"It is a movement in the right direction," he said. "My concern about it is that a lot of this stuff is pretty microscopic--this widget here and this widget there. And the challenge is to get these things assembled into whole modules so the kids can learn . . . a way of thinking in an integrated way."</p> <p>Several companies say that is exactly what</p>		

Narrative	Analysis Categories	Code Line Count
<p>they are doing. Kevin Warner, education marketing director for Cisco Systems, said the Cisco academies--which enroll about 80,000 high school and community college students--place a strong emphasis on communication skills and teamwork, which prepare students for any career.</p> <p>Other companies also are providing schools with instructional materials. Oracle Corp. has just launched the Oracle Internet Academy in 30 high schools across the country, including two in Fairfax and three in Prince George's counties, and it plans to add schools next year. The academy introduces students to the Internet and to Web technology, including Oracle's technology.</p> <p>The Oracle program runs for four semesters. It is free to the schools this year, and there will be a small "commitment" fee for schools that continue it, an Oracle spokeswoman said.</p> <p>Microsoft has brought its certification programs into many high schools, including Forest Park and Chantilly Academy at Chantilly High School.</p> <p>For the industry, the need is clear. The shortage of tech employees is huge, and it is expected to grow. The Information Technology Association of America projects a shortage in the next year of more than 800,000 employees—including programmers, software engineers and technical writers. High school graduates could take some of those jobs, making about \$25,000 to \$30,000 a year. With a college degree and internship experience, employees could earn more, depending on specific skills.</p> <p>The companies say they want the high school students who take their training programs to continue on to college.</p> <p>Four-year colleges also would benefit from partnerships with tech companies, said John Wittmann, administrator of the Chantilly Academy. Colleges typically offer computer science and electrical engineering degrees, yet skills such as computer networking and Web</p>		

Narrative	Analysis Categories	Code Line Count
<p>design do not fit neatly into either of those majors, he said.</p> <p>But companies are attracted to working with high schools and community colleges because curriculum changes can be made much more quickly at that level, Wittmann said. He disputes the notion that the technology certification programs are too narrow. Concerns about over-specialization do not come up when children spend years focusing on arts such as music and theater, he said.</p> <p>The tech programs also are popular. The Chantilly Academy has 1,000 students and is turning away many more for lack of space, Wittmann said. At Forest Park, 368 students are taking information technology classes, and several others were unable to get in. In addition to the Cisco Academy, Forest Park students may enter the Allen Academy of Multimedia, various Microsoft certification programs or the A+ network technician program.</p> <p>"I think it's good to learn all this before you get out into the real world," said Tiffany Dodson, a 16-year-old junior in the Cisco Academy. "That's what the real world is; it's all computers."</p> <p>Kozlowski, also a junior, sees working with computer hardware in his future. "That's been my focus right now, because that's what I've been good at. But here, I get a chance to find out where my strengths are."</p>		
<p>7:2) 12-SEP-2000 14:24 Susan Doherty (squinnxx)  To view the entire article, go to <a href="http://www.washingtonpost.com/wp-dyn/articles/A11928-2000Sep4.html">http://www.washingtonpost.com/wp-dyn/articles/A11928-2000Sep4.html</a>  Internet at School Is Changing Work of Students--and Teachers. As students across the country trundle back to class, they are taking their seats in schools more wired than ever before and huddling around desktop computers in small groups more often. Then they are tapping into the Internet to complete their assignments.</p>	Factual lecturing	5f-173

Narrative	Analysis Categories	Code Line Count
<p>Fully 95 percent of the nation's public schools are now connected to the Internet. By comparison, less than half the nation's households are.</p> <p>The wiring of America's schools--originally conceived as a way to bridge the "digital divide" that isolates poor children and to transmit advanced courses to rural schools--is also changing the way teachers teach and students learn. Quite possibly, it may be increasing how much students learn, particularly average and shy ones, educational technology experts say. While there are no published studies to verify those preliminary conclusions, and most schools suffer from shortages of tech-trained teachers and classroom computers, specialists are pleased with the initial results.</p> <p>"There is nothing that says technology will improve student achievement, but we believe that it does because it meets so many different learning styles," says Cindy Bowman, an education professor at Florida State University. Two-thirds of public school teachers say they now employ computer applications in lessons, and at least 30 percent use the Internet, according to an Education Department survey. And students at every grade level this school year will exchange e-mails with "keypals" in foreign countries, take "virtual field trips" to museums and historic sites or research the range of academic subjects on the Internet.</p> <p>One particular format for student research projects, called WebQuests, has rapidly become popular with teachers in the five years since it was designed at San Diego State University. "What gets students' attention is something really glitzy and crazy on the computer screen," says Bowman, who teaches her Florida State students how to create WebQuests.</p> <p>Education technology specialists say there is preliminary evidence that the students who may learn more using the Internet include "visual learners," average students, disabled ones, students not fully proficient in English and shy ones who shrink from joining</p>		

Narrative	Analysis Categories	Code Line Count
<p>classroom discussion.</p> <p>"There's a growing body of evidence that many learners do blossom with interactive media more than they do face to face," says Chris Dede, a professor of learning technologies at Harvard University.</p> <p>In the opinion of Dede and other experts, the Internet can also alter the learning experience for all students.</p> <p>Rather than studies being linear and sequential--one page or textbook chapter after another--researching a topic on the World Wide Web can lead students to spontaneous discoveries of related information drawn from more than one academic subject, similar to browsing through open stacks in a library.</p> <p>The technology-driven changes penetrating schools across the country mean the most adept teachers do! less lecturing, and change from classroom know-it-all to learning coach who guides students to what they need to know.</p> <p>So far, schools in prosperous suburban districts have advanced the most in tapping the educational potential of the Internet. Those schools are better able to bear the cost of training teachers as well as purchasing computers and wiring classrooms.</p> <p>In 1996, President Clinton set national goals of installing a computer in every classroom, wiring each to the Internet and training all teachers how to use computers. Since then, the federal government has devoted \$6 billion to wire schools under the "e-rate" program of subsidies pushed by Vice President Gore.</p> <p>But there has been no similar push to train teachers in technology use. An Education Department survey last year found that only a third of public school teachers consider themselves prepared to use computers and the Internet.</p> <p>Computer training is being done piecemeal by</p>		

Narrative	Analysis Categories	Code Line Count
<p>school districts and education groups such as the National Science Teachers Association and the Association for Supervision and Curriculum Development, both of which offered popular courses this summer. Such training is in great demand.</p> <p>"I think that, for the most part, teachers are excited about it," said Barbara Stein, an education technology analyst at the National Education Association. "The Internet is sort of the ultimate enhancement of resources for the classroom. I think they have been frustrated sometimes at trying to identify the best uses of the new technology."</p> <p>While nearly every school is connected to the Internet, only about five of eight classrooms are. Currently, schools have a computer for every six students, limiting individual time online and forcing--fortuitously, in the opinion of some educators--students to collaborate on assignments.</p> <p>Some districts are much closer to achieving Clinton's goals. In San Bernardino, Calif., for instance, 97 percent of classrooms are wired, and many have enough computers for entire classes to use the Internet daily, according to the Education and Libraries Network Coalition (EdLinc), which advocates for the e-rate. Instead of boarding yellow buses, some students are riding the Internet on virtual field trips. The tiny town of Thompsonville, Ill., is too far away for students to make a day trip to Springfield, the state capital, so classes have instead taken online tours of the governor's mansion and historic sites associated with Abraham Lincoln, according to a recent EdLinc report on 40 school districts that effectively use the Internet.</p> <p>Students elsewhere have gone online to explore distant caves and tour a British museum.</p> <p>In 1995, Bernie Dodge, a professor of educational technology at San Diego State University, designed another kind of learning adventure--WebQuest. For a growing number of teachers, WebQuest has wrung the mystery</p>		

Narrative	Analysis Categories	Code Line Count
<p>and frustration out of using the Internet. WebQuests are research projects designed to make students think creatively about "real world" problems, then propose and argue for solutions.</p> <p>The projects pose an open-ended question such as "What government policy should be established to regulate cloning?," the central task of a popular WebQuest for high school science students entitled, "Hello, Dolly."</p> <p>Each WebQuest lists relevant Web sites so students will spend less time searching for information and have less chance of being exposed to inappropriate material. Teachers can follow the six-part format to create their own WebQuests, or use at no cost any of the 200 linked to Dodge's Web site (<a href="http://edweb.sdsu.edu/webquest/webquest.html">edweb.sdsu.edu/webquest/webquest.html</a>). Linda Spefaniak, a science teacher at Allentown High School in New Jersey, has created a WebQuest in which her chemistry students pretend to be members of a forensics team investigating a crime.</p> <p>"They hated it when they started that particular project, because I wouldn't give them the answer," Spefaniak recalls. But by the end, "they were very pleased with themselves. . . . It gives them an option of creativity, which they can take in many different directions and find an honest answer."</p>		

**Factual lecturing**

**5f-324**

**Greenroom****Table # 113: Greenroom, Item 8, Power Point Test**

Narrative	Analysis Categories	Code Line Count
Mathweb2000 Greenroom Item 8 Power Point test  Item 8 08-OCT-2000 17:38 Susan Doherty (squinnxx) To test putting power point in caucus	Gives directions: physical action on the part of the learner	6-1

**Gives directions: physical action on the part of the learner****6-1****Greenroom****Table # 114: Greenroom, Item 9, Test Power Point**

Narrative	Analysis Categories	Code Line Count
Mathweb2000 Greenroom Item 9 test2 Item 9 08-OCT-2000 17:45 Susan Doherty (squinnxx) Test power point	Gives directions: physical action on the part of the learner	6-1

**Gives directions: physical action on the part of the learner****6-1****Greenroom****Table # 115: Greenroom, Item 10, Welcome**

Narrative	Analysis Categories	Code Line Count
Mathweb2000 Greenroom Item 10 Welcome  Item 10 09-OCT-2000 11:52 Carey Bolster (bolster) Hello and Welcome, I am excited that MathWeb 2000- Assessment: Benchmarks for Success is going to be happening in 3 weeks! I am sure you have seen it advertised in the NCTM publications, on the PBS web, and even on postcards. There is mounting interest among educators and others to gather ideas,	Orientation lecturing	50-31

Narrative	Analysis Categories	Code Line Count
<p>interact with colleagues, and initiate changes that will affect classroom assessment and instruction by attending this virtual math convention.</p> <p>MathWeb 2000 will reach educators who normally cannot attend conventions. Teachers that can't get released time, educators who can't afford it, pre-service college students who have other classes, and a large number of people who have family obligations that are of primary importance. You will bring your message to them. The conference is available to them anytime, anyplace.</p> <p>MathWeb 2000 would not be possible if it weren't for you, and the rest of the "speakers" on the program. You are the daredevils of education!!! I know each of you, and fully appreciate the heavy demands of being a leader in math education. But whom else would I turn to but you!!! The ones that are so overworked but still haven't learned the word "no"! Those who love, "thrives on" might be a better descriptor, grabbing a new idea, and supports it by jumping in with both feet.</p>		

**Orientation lecturing**

**50-31**

**Resort Fun**

**Table # 116: Resort Fun, PBS MW**

Narrative	Analysis Categories	Code Line Count
PBS MW Resort Fun		
Where in the world would you like to go?	Asks for sharing of experiences	4s-1
Here we are on Mathweb Island. This is a great place to have a conference! But as input to the next conference planning team - where should we go virtually next?	Asks convergent questions	4c-4
<p>If you could take a vacation anywhere in the world, where would you choose?</p> <p style="padding-left: 40px;">Aspen, CO</p> <p style="padding-left: 40px;">Hawaii</p>	Asks for sharing of experiences	4s-10

Narrative	Analysis Categories	Code Line Count
Disneyland Hong Kong Paris Mexico New York Other (please specify)		
What kinds of things do you like to do on vacation?  See Historical Sights Sit on the Beach Play Sports Read Books Visit Museums Take a Course	Asks for sharing of experiences	4s-8
Who do you like to bring with you on vacation?  Partner Children Parents Friends Colleagues Pets Spouse Other (please specify)	Asks for sharing of experiences	4s-9
What was the WORST vacation you ever took?	Asks for sharing of experiences	4s-1

**Asks convergent questions**  
**Asks for sharing of experiences**

**4c-4**  
**4s-29**

**Poolside Cafe**

**Poolside Café, Item 1**

**Table # 117: Poolside Café, Item 1, Welcome**

Narrative	Analysis Categories	Code Line Count
Mathweb 2000 Center Poolside Cafe Item 1		
1 Welcome 2 Introduce Yourself 145 3 Math in the News 23 4 Question of the Day 15 5 Recommended Article 10 6 What's on your mind? 50 7 Teacher educators 8 8 Education Stories 1 9 Educational Quotes 12 10 Online Improv 42 11 PBS Program 4 12 Food for thought 2 13 Certificate of Attendance 11 14 Parting comments 12		
Welcome Item 1 11-SEP-2000 20:41 Susan Doherty (squinnxx) Welcome to the Poolside Café! This is your place to meet other educators, get inspired, and have fun!	Teacher initiated discussion w/student	11d-3
1:1) 05-OCT-2000 13:15 Susan Doherty (squinnxx) You can start your own discussion items in the Cafe! To create an item, click on create a new item on the Cafe home page. You will be prompted to fill in the title and first introductory comments to get started. Then, simply click on to see what you've created!	Teacher initiated discussion w/student	11d-8
1:2) 05-OCT-2000 13:24 Susan Doherty (squinnxx) First things first though!  Please join us in Item 2 (you can click to it right from this link) where participants are introducing themselves!	Teacher initiated discussion w/student	11d-4

**Teacher initiated discussion w/student**

**11d-15**

**Poolside Café, Item 1**

**Table # 118: Poolside Café, Item 2, Introduce Yourself**

Narrative	Analysis Categories	Code Line Count
<p>Poolside Cafe Item 2 Mathweb 2000 Center, Poolside Cafe , Item 2</p> <p>Introduce Yourself Item 2 05-OCT-2000 13:27 Susan Doherty (squinnxx) Let us know who you are! Where are you? What brought you to Mathweb 2000?</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-2</p>
<p>2:1) 29-OCT-2000 18:23 Susan Doherty (squinnxx) I'll go first! I'm Susan Doherty with Group Jazz, one of the producers of this event. I'm excited that we're able to bring together educators from around the country and around the world!</p> <p>So dive in and say hello, the water is fine!</p>	<p>Name/city ID preface</p>	<p>10N-5</p>
<p>2:2) 29-OCT-2000 19:12 Steve Crandall (scrandall) Hello! My name is Steve Crandall. I teach 8th graders at Inverness Middle School in Inverness, FL. I am looking forward to the activities in this event!! Yours, Steve</p>	<p>Name/city ID preface</p>	<p>10N-4</p>
<p>2:3) 29-OCT-2000 20:47 Mattie Saunders Jones (msjones) Hello, I am Mattie Saunders Jones, Asst Prin at Hardy Middle School in Jackson, MS. and a former Math Specialist for the District. I expect this workshop to be very useful to me. Sincerely, Mattie</p>	<p>Name/city ID preface</p>	<p>10N-5</p>
<p>2:4) 29-OCT-2000 21:35 Joyce Bytnar (joybyts) My name is Joyce Bytnar, math teacher at Nerinx Hall High School in St. Louis. I think this concept of going to a conference on-line is pretty exciting and I look forward to it! Joyce</p>	<p>Name/city ID preface</p>	<p>10N-4</p>
<p>2:5) 30-OCT-2000 09:18 Nancy Paugh (npaugh) I'm Nancy Paugh, the Math Supervisor in</p>	<p>Name/city ID preface</p>	<p>10N-4</p>

Narrative	Analysis Categories	Code Line Count
Woodbridge (NJ) Schools. I'm looking for new ways to incorporate the Standards in K-12 math instruction.		
2:6) 30-OCT-2000 10:45 Anne Park (apark3) Hi! I am Anne Park from John Bassett Moore Middle School in Smyrna, DE. I like being online for a conference. Much cheaper!!! I look forward to ideas to incorporate with our Math in Context Curriculum.	Name/city ID preface	10N-5
2:7) 30-OCT-2000 11:16 Marie Elizabeth Pink (pinkme) I'm Marie Elizabeth Pink. I'm a faculty member at Alverno College in Milwaukee, WI. I assist in the preparation of mathematics teachers at the middle and secondary level. It is great to have such an experience. I'm looking forward to it. Marie Elizabeth	Name/city ID preface	10N-6
2:8) 30-OCT-2000 11:35 Wilhelmina Mazza (billiemsd) Hi I'm Billie Mazza. I am the elementary staff development specialist in Lewistown PA. I love working with elementary teachers and am hoping to find and share ideas at this conference.	Name/city ID preface	10N-5
2:9) 30-OCT-2000 12:10 Monty Phister (mphister) I'm Monty Phister, a retired computer engineer. For ten years I taught math to sixth-graders here in Santa Fe, NM, on a volunteer basis. The object was to try to get them interested in math, and I'd spend an hour with each class on five Wednesdays (or Tuesdays, or whatever), teaching them a little algebra, geometry, and topology.	Name/city ID preface	10N-8
2:10) 30-OCT-2000 12:20 Susan Doherty (squinnxx) Hi Steve, Mattie, Joyce, Nancy, Ann, Marie, Billie, and Monty!! Thanks for jumping right in! This is a get to know the place day, so take a look around and even start your own discussion items here in the cafe. This is your	Teacher initiated discussion w/student	11d-6

Narrative	Analysis Categories	Code Line Count
place to connect with other educators!		
<p>2:11) 30-OCT-2000 12:28 Diana Paterson (dpaterson)  Hello from the SIMMS Integrated Mathematics Project headquartered at Montana State University in Bozeman, Montana. We are involved with a NCTM Standards-based mathematics curriculum that emphasizes problem solving and mathematical reasoning and uses technology as a tool. What an exciting opportunity to converse and learn in this innovative environment! We are ready to listen and participate.</p>	Name/city ID preface	10N-10
<p>2:12) 30-OCT-2000 12:34 Mari Muri (mmuri)  Hi, I'm Mari Muri, a math consultant with the Connecticut Department of Education. I'm a member of Panel 1 and look forward to having you join in our conversations!</p>	Name/city ID preface	10N-4
<p>2:13) 30-OCT-2000 13:10 Fran Berry (fberry)  Hi, I'm Fran Berry. I'm the project director for COMMSTEP, the Colorado Mathematics Middle School Teacher Enhancement Project. We're funded by the National Science Foundation as a Local Systemic Change project. I'm looking forward to the conversations at this conference and want to thank Carey Bolster for all of his hard work in making this conference a reality.</p>	Name/city ID preface	10N-9
<p>2:14) 30-OCT-2000 14:06 Lisa Shute (shutel)  Hi, My name is Lisa Shute. I am a High School Mathematics teacher in Billings, MT. I am looking forward to the conversations and sectionals MathWeb 2000 has to offer.</p>	Name/city ID preface	10N-4
<p>2:15) 30-OCT-2000 14:08 Elizabeth Bleich (elizabethb)  Hi I'm Elizabeth Bleich. I taught Math and Science in Wellesley, MA for the last 7 years. This year I am working at TERC on a project called LSC-net. We run a Website for Local Systemic Change schools to connect with each other. We are also going to run a "virtual</p>	Name/city ID preface	10N-8

Narrative	Analysis Categories	Code Line Count
conference." So I'm interested to see how this works.		
2:16) 30-OCT-2000 14:17 Roberta W Grenz (robin) Hi! I'm Roberta Grenz (Robin is my preferred nick name). I teach math at the Community College of Southern Nevada. I teach the math for elementary school teachers courses, among others. I have also taught at the elementary (reading) and high school (math) level - including a year in high schools in Germany.	Name/city ID preface	10N-8
2:17) 30-OCT-2000 14:18 Tom Triolo (tsquared) Hi, I'm Tom TRiolo. I teach 7th and 8th grade Algebra in Wyncote, PA. I am particularly interested in learning new assessment techniques. The R in TRiolo is not a typo. Check out my website( there are no ads I promise) to find out why. <a href="http://www.tsquared.org">http://www.tsquared.org</a>	Name/city ID preface	10N-7
2:18) 30-OCT-2000 14:40 Roya Salehi (roya) Hello from the Math Forum to all the participants of this on-line conference. I am a former Mathematics teacher currently heading two projects at the Math Forum. The first one is a peer-mentored question and answer service for teachers of mathematics, called Teacher2Teacher ( <a href="http://mathforum.com/t2t/">http://mathforum.com/t2t/</a> ). The other is a collaborative project with TERC and Michigan state U. called Bridging Research and Practice (BRAP) ( <a href="http://mathforum.com/brap/wrap/">http://mathforum.com/brap/wrap/</a> ) where we investigate professional development aspect of producing and using of Videopapers.  I'm an advocate of on-line and virtual learning experiences (professional development opportunities) for teachers and hope to learn something from this experience that can help me articulate its value better. Roya Salehi	Name/city ID preface	10N-18
2:19) 30-OCT-2000 14:41 John P. Nugent (nugent)		

Narrative	Analysis Categories	Code Line Count
<p>University) in order to become a Elementary school teacher. Currently a junior, my major will be Science, with a minor in Math. I'm looking forward to any information which may help me in the future with my students.</p>	<p>Name/city ID preface</p>	<p>10N-5</p>
<p>2:20) 30-OCT-2000 15:13 Barbara Middleton (bjmiddle) Hello, my name is Barbara Heyne-Middleton. I work in Gloucester City, NJ. My full time position is a basic skills math instructor for grades K to 3, and my part-time position is working under a grant at Rowan University where I assist teachers with the implementation of the NCTM Standards. This is accomplished through workshop presentations, resources and demo lessons. I am looking forward to this conference.</p>	<p>Name/city ID preface</p>	<p>10N-10</p>
<p>2:21) 30-OCT-2000 15:44 Kristy Paterson (shoozi) Hi! My name is Kristy Paterson. I'm an educational consultant for an Intermediate Unit in NW PA. We service 17 school districts in 3 counties. I am looking forward to new ideas and research based best practices for the teaching of mathematics.</p>	<p>Name/city ID preface</p>	<p>10N-6</p>
<p>2:22) 30-OCT-2000 15:52 Robert Drupp (rdrupp) Hi! I'm Bob Drupp, an elementary math specialist in Southern York County, PA. I'm currently concentrating on assessment questions that can be used in 4th grade to prepare them for the questions on the state test that they will take in 5th grade. This conference sounds very interesting.</p>	<p>Name/city ID preface</p>	<p>10N-7</p>
<p>2:23) 30-OCT-2000 16:46 Jeanine Brizendine (eteacher) Hi, I am Jeanine Brizendine, a math resource specialists for grades K-8. I'm currently working with teachers in my district on implementing a new county curriculum (based on NCTM Standards) that my resource team and I have been writing. I am looking forward to sharing new ideas on assessment, as well</p>	<p>Name/city ID preface</p>	<p>10N-8</p>

Narrative	Analysis Categories	Code Line Count
as the experience of this conference.		
<p>2:25) 30-OCT-2000 17:03 Fred G. Harwood (fharwood)  I'm Fred Harwood, a secondary mathematics educator from Richmond, BC. I'm always looking to improve my assessment techniques and those of my students. I'll continue to do so until my assessment matches up to my objectives to give a fair &amp; effective representation of their learning and to improve their (and my own) learning. Learning together, meeting the challenges, achieving our dreams is our school mission statement and I look forward to working in this way with you all in the next few weeks.</p>	Name/city ID preface	10N-12
<p>2:26) 30-OCT-2000 17:17 Carole Bilyk (cbilyk)  Hi. I'm Carole Bilyk and I'm a mathematics consultant with Manitoba Education and Training in Manitoba, Canada. I'm looking forward to sharing ideas for mathematics education especially for the Senior Years students.</p>	Name/city ID preface	10N-6
<p>2:27) 30-OCT-2000 17:44 Luke Dowell (ldowell)  I'm Luke Dowell, a math instructor at Seward County Community College in Liberal, Kansas. I am very interested in alternative methods of assessment in math for all levels, especially those utilizing technology.</p>	Name/city ID preface	10N-5
<p>2:28) 30-OCT-2000 17:56 Cheryl Holt (clhsd)  Hello! I'm Cheryl Holt and I'm attending South Dakota State University in Brookings, SD. I am currently doing my student teaching and will graduate in December(Yeah!). I hope this conference gives me lots of ideas to use with my classes the next couple of weeks.</p>	Name/city ID preface	10N-6
<p>2:29) 30-OCT-2000 18:27 Robert Hurd (robert)  Hi! I am Robert Hurd. I had been a middle school mathematics teacher in Palo Alto, Ca. for 11 years, teaching remedial to algebra, spending a year as dept. head. I also was a</p>	Name/city ID preface	10N-16

Narrative	Analysis Categories	Code Line Count
<p>participating teacher helping develop the Middle-school Mathematics through Applications Project (MMAP), an NSF funded curriculum project. I currently work at WestEd in San Francisco on projects from implementing the MMAP curriculum (now know as Pathways published by Voyager) nation wide, to online teacher professional development, and parent education on standards based mathematics education. So I am interested in see this conference on every level from math education issues to online mechanics.</p>		
<p>2:30) 30-OCT-2000 18:34 Susan Doherty (squinnxx) Welcome all! You can create your own discussion items in the Poolside cafe, but if you've got an idea for one, I'd be happy to create it! This is your space!</p>	Teacher initiated discussion w/student	11d-4
<p>2:31) 30-OCT-2000 19:02 Cliff Knighton (cknighton) Hi, my name is Cliff Knighton. I teach SIMMS Integrated Math levels 2 - 6 at Bridger High School in Bridger, MT. My interests include math modeling, and alternative assessment. Maybe I missed it, where's the ePub?</p>	Name/city ID preface	10N-5
<p>2:32) 30-OCT-2000 19:48 Deb Burdick (dburdick) Greetings from Alaska- My name is Deb Burdick and I teach vocational math courses and fascilitate professional development training for teachers at the Alaska Vocational Technical Center. I am currently laying on a bed in my cabin recovering from knee surgery so I will be a very active participant during the next few weeks. We just got our first real snow fall (that will stick around) yesterday. Looking forward to the discussions.</p>	Name/city ID preface	10N-11
<p>2:33) 30-OCT-2000 20:14 Dr. Carole E. Gould (grammie) My name is Carole Gould and I currently teach high school Algebra in Franklin, TN. I am hoping to be able to comprehend the</p>	Name/city ID preface	10N-5

Narrative	Analysis Categories	Code Line Count
<p>machinations of this virtual conference. It looks a bit overwhelming right now.</p>		
<p>2:34) 30-OCT-2000 20:22 Jeanne Zimet (jzimet211) Hi, my name is Jeanne Zimet and I currently teach 6th grade math at John Wilson Intermediate school in Brooklyn, New York. I have taught grades 6 through 8 in the past and have participated in other online workshops with other math teachers. I am very interested in assessment and incorporating the Math in Context curriculum with the Standards. I am looking forward to this forum.</p>	Name/city ID preface	10N-9
<p>2:35) 30-OCT-2000 20:22 Edward M. Curran (emc) Hi! My name is Ed Curran. I'm a teacher and chairperson in the math dept. at Archbishop Molloy H.S. in Queens, NY. I'm interested in new ideas about assessment, and I am also interested in the dynamics of internet-based conferencing. We're in the process of changing curriculum (and textbooks) to meet the new NYS standards. Any suggestions would be appreciated.</p>	Name/city ID preface	10N-9
<p>2:36) 30-OCT-2000 21:51 Eleanor Ennis (eennis) Hi, I'm Ellie Ennis from Salisbury, Maryland. Salisbury is on the Eastern Shore of Maryland. We are on a peninsula between the Atlantic Ocean and the Chesapeake Bay about 110 south east of Baltimore. I am a Schools for Success Facilitator at Chipman Elementary School. WE are a pre-k to 2 primary school with about 450 students. We have 7 first grades and 6 second grades.  As a facilitator I work with all teachers and classrooms on effective teaching strategies. I am looking forward to the discussion and workshop at this conference.</p>	Name/city ID preface	10N-13
<p>2:37) 30-OCT-2000 22:40 Pamela J. Strout (pamstrout) Hi! I'm Pam Strout from Danbury,</p>	Name/city ID preface	10N-12

Narrative	Analysis Categories	Code Line Count
<p>Connecticut. I'm the Math Department Head at Bethel High School in Bethel, Ct. right next door to Danbury. I also teach two honors geometries and one academic geometry this year. We are in our second year using the COMAP Modeling Our World texts for our academic algebra I and geometry classes. What a wonderful idea this is. I look forward to the discussions on assessment and the opportunity to correspond with educators from around the world.</p>		
<p>2:38) 30-OCT-2000 22:46 Deirdre Alameddine (coqui)  Hi I'm Dee Alameddine in San Antonio, TX. I am a graduate student at Trinity University. I am doing an internship in a bilingual program K-5 and in a spanish immersion program K-3. I was trained in CGI in Phoenix, AZ where I taught dual language Kindergarten.</p> <p>I want to learn as much as I can about math assessment especially when teaching math in context. Because of TAAS teachers here seem to be teaching to this test. (I visit lots of classrooms) I want to be a change agent in the system to encourage teaching math in context. Knowing more about assessments will help me gather the data needed to show how much more successful children are when instruction is student-centered and cognitively appropriate.  Dee</p>	Name/city ID preface	10N-17
<p>2:39) 30-OCT-2000 22:54 larry hall (fun-pro)  Greetings all! I am Larry Hall, and teach at Mayfield Middle Alternative School in Carlotte, NC. I learned of this conference from Bill Scott (DPI), and am quite excited about not only the learning environment, but the capability and opportunity to interact with so many other net explorers.,</p>	Name/city ID preface	10N-7
<p>2:40) 30-OCT-2000 23:44 Jeanne Keiko Shimizu (jeanne)  Hi! I'm Jeanne Shimizu. I am a math teacher and department chair at San Juan High School in Citrus Heights, a suburb of Sacramento, CA.</p>	Name/city ID preface	10N-10

Narrative	Analysis Categories	Code Line Count
<p>I volunteer as an associate for the Math Forum's Teacher2Teacher. Roya Salehi told me about this conference earlier this month. The more I thought about Mathweb 2000, the more interested I became. So, here I am! I am looking forward to the discussions, the opportunities to interact with everyone.</p>		
<p>2:41) 31-OCT-2000 00:56 Michael E Matthews (hamath) My name is Michael Matthews. I teach 9-12 Mathematics and am Department head for Rite of Passage Charter High Schools in Yerington NV. My interests are mathematical linguistics, testing, middle school curriculum, special education, and low level students. Looking forward to it!</p>	Name/city ID preface	10N-7
<p>2:42) 31-OCT-2000 01:25 Lana McDonald (lanad) Hi, I am Lana McDonald. I teach a Grade 5 at C.W.Sawyer Primary in Nassau, The Bahamas. Previously, I worked as a mathematics curriculum facilitator in Trinidad and Tobago(both countries are in the Caribbean). As a facilitator, I was involved in the process of implementing reforminitatives in the teaching and learning of mathematics in the primary schools of Trinidad and Tobago.</p> <p>I am looking forward to participating in this innovative forum, and sharing ideas with educators around the world. I know that I'll learn a lot.</p>	Name/city ID preface	10N-13
<p>2:43) 31-OCT-2000 05:09 Anita Savva (asavva) Hi Everyone, I'm Anita Savva. I teach middle school math and Algebra in Nicosia Cyprus. We are currently in the process of revamping our Math program to accomodate NCTM standards and the International Baccalaureate program. I'm really looking forward to the conference.</p>	Name/city ID preface	10N-6
<p>2:44) 31-OCT-2000 05:55 Elizabeth</p>		

Narrative	Analysis Categories	Code Line Count
<p>Staudenmeier (erstauden) Hi, I'm Robin Staudenmeier, a math teacher at Olympia High School in Illinois and the math coordinator for our middle and high schools. I am interested in finding rich, valid, rigorous alternative assessments for my students. I am responsible for aligning our scope and sequence with the state learning standards. I'm excited about participating online. This is a great opportunity for all of us.</p>	Name/city ID preface	10N-9
<p>2:45) 31-OCT-2000 06:44 Linda M. Newman (lmnew) Hi! I'm Linda Newman, currently teaching algebra and geometry in the Amer Creativity Academy in Kuwait...thanks to NCTM articles and conferences, I've been playing with assessment and saw this as a chance to find some new ideas.</p>	Name/city ID preface	10N-6
<p>2:46) 31-OCT-2000 07:13 Sandra Baggett (sandraba) Hi, I'm Sandra Baggett, a pre-algebra teacher at Greater Atlanta Christian School. I've just begun to tap the Internet and am excited about this new opportunity in professional development. Our school has been studying assessment over the last year for SACS accreditation.</p>	Name/city ID preface	10N-4
<p>2:47) 31-OCT-2000 07:39 Andrea Miller (miller) Hi, I'm Andrea Miller. I am a curriculum specialist at the Allegheny Intermediate Unit. My area of concentration is math.</p>	Name/city ID preface	10N-3
<p>2:48) 31-OCT-2000 07:59 Maggie McGatha (mcgatham) Hi! I'm Maggie McGatha. I am an assistant professor of Mathematics Education at Northern Kentucky University. I'm looking forward to getting some great ideas on assessment!</p>	Name/city ID preface	10N-5
<p>2:49) 31-OCT-2000 09:20 Barbara Ham (bham) Hi! I'm Barbara Ham, secondary mathematics</p>	Name/city ID preface	10N-5

Narrative	Analysis Categories	Code Line Count
<p>supervisor for Dougherty County Schools in Albany, GA. I am looking for information on textbook adoption and staff development for grades 6-8 with emphasis on problem solving.</p>		
<p>2:50) 31-OCT-2000 09:35 Jeane Joyner (jjoyner)            Jeane Joyner here. I work with the NC Department of Public Instruction and am a member of one of next week's panels. Two areas of concern for many teachers are (1) how to make on-going, formative assessment an integrated part of the instructional routine (as opposed to assessment being something separate that happens at the end of an instructional sequence) and (2) once assessments are given, how to effectively use that information to give quality feedback to students and to modify instruction. Do you have thoughts to share on these issues?</p>	Name/city ID preface	10N-13
<p>2:51) 31-OCT-2000 09:36 Susan Carlin (carlins)            Hi! I'm Susan Carlin, elementary math support cadre for Christina School District, Newark, DE. I have been working with K-5 math teachers for the past 3 years. We have not formally adopted any one SB curriculum, but have allowed buildings to adopt an NSF recommended series.</p> <p>Seeing is believing, regarding convincing seasoned teacher to embrace constructivist theory. Many teachers have been convinced to change practice by watching their class respond to a demonstrated SB lesson. Very Cool to witness.</p>	Name/city ID preface	10N-13
<p>2:52) 31-OCT-2000 09:37 Carol Stead (cstead)            Hi I'm Carol Stead from Wilmington, De. I have been a math teacher at New Castle County Vo Tech for 28 years and am currently on loan to a NSF Grant thru the University of Delaware and the Department of Instruction as a Secondary Math Specialist to help w/ the implementation of Exemplary secondary Math Curriculums. I am particularly involved w/ the Core Plus implementation in our state. Glad to</p>	Name/city ID preface	10N-10

Narrative	Analysis Categories	Code Line Count
meet you all. Looking forward to this experience.		
2:53) 31-OCT-2000 09:47 Cathy Ortolan (pchsmath) Hi! I'm Cathy Ortolan and I teach math at Pinckneyville Community High School in Pinckneyville, Illinois	Name/city ID preface	10N-3
2:54) 31-OCT-2000 10:53 Gina Moody (gmoo) Hello All! A 10-year 'veteran', I'm Gina Moody and I work in the mathematics staff development office in the Christina School District, Newark, DE. I work with secondary math teachers, primarily those teachers who are implementing the Connected Mathematics Project in grades 6-8. I am interested in "meeting" other secondary math teachers and hearing their views on the Standards and how they incorporate them into the classroom. This on-line conference...Great Idea!!	Name/city ID preface	10N-11
2:55) 31-OCT-2000 11:00 Susan Doherty (squinnxx) Hello Everyone! Great to have you here. Phil Daro's keynote, panel 1, and workshops 1 and 2 are now open! Visit them and ask questions in the Main House	Teacher initiated discussion	11d-4
2:56) 31-OCT-2000 11:18 Lisa Onkotz (lisag) Hi to all! I'm Lisa Onkotz, an elementary math specialist in two Title schools in the Bethlehem Area School District, Bethlehem, PA. I'm looking for ideas for incorporating the Standards in the classroom and for developing assessments that will prepare our students for the rigorous Standards-based testing in the spring. I'm especially interested in sharing ideas with teachers in schools with extremely transient student populations, such as mine. Assessments in these types of schools pose a very special problem. I look forward to the online conference and hope to learn a great deal about assessment!	Name/city ID preface	10N-14
2:57) 31-OCT-2000 11:58 Heather Back		

Narrative	Analysis Categories	Code Line Count
<p>(hlback) Hello- I'm Heather Back and have spent the past three years teaching math at the high school level at St. Paul's School in Concord, NH. However, I'm currently in Boston attending Boston College and earning a Master's in Education in Curriculum and Instruction, with a focus on math and technology. I'm very interested in learning more about assessment and improving what I do in my own classroom.</p>	Name/city ID preface	10N-9
<p>2:58) 31-OCT-2000 12:43 Craig Morgan (cmorgan) Greetings: My name is Craig Morgan and I'm the Math/Technology Facilitator for the Haddon Township, NJ, Public Schools. We've been using Everyday Math Program in our elementary schools for the past 3 years and recently started Connected Math and Core Plus in our Jr/Sr. High. Assessment driving instruction is a focus of what we are doing because most teachers have no idea what that means. The more I can find out the better. I'd like to say hello to Ann Lawrence, one of the participants, because she and I were members of the 95 Leadership Program in Discrete Mathematics at Rutgers University. I wondered what happened to her and now I know she went on to bigger and better things! Craig Morgan</p>	Name/city ID preface	10N-17
<p>2:59) 31-OCT-2000 12:57 Gail Hoskins (gailhoskins) Greetings! I am Gail Hoskins, Senior Outreach Coordinator for Eisenhower National Clearinghouse (ENC) at <a href="http://www.enc.org">http://www.enc.org</a>. I have been with ENC since it began eight years ago. Before that I was a secondary level math teacher and K-12 Math Coordinator. I have been an active member of NCTM since the "Agenda for Action" days. I look forward to participating in this conference and welcome off-conference mail at <a href="mailto:ghoskins@enc.org">ghoskins@enc.org</a>.</p>	Name/city ID preface	10N-10
<p>2:60) 31-OCT-2000 13:05 Paula Bendall (ratiga8.) Hi. I'm Paula Bendall, an elementary school tutor in NYC. I wanted to see what it felt like to</p>	Name/city ID preface	10N-5

Narrative	Analysis Categories	Code Line Count
take a course on line. I look forward to chatting with members of NCTM about specific topics of mutual interests.		
2:61) 31-OCT-2000 13:14 Kathy Epperly (kepperly) Hi. I'm Kathy Epperly. I am a retired high school math teacher in the St. Louis area. Right now I am teaching part time at my local high school and Fontbonne College. This conference covers all aspects of my part-time positions, geometry teacher and computer education instructor.	Name/city ID preface	10N-7
2:62) 31-OCT-2000 13:22 Janie Zimmer (zimmer) Greetings! I am Janie Zimmer at the Mid-Atlantic Eisenhower Consortium at Research for Better Schools ( <a href="http://www.rbs.org">http://www.rbs.org</a> ) in Philadelphia. Prior to this I have been a 6-12 mathematics teacher in Baltimore City, and a Supervisor, then K-12 Mathematics Coordinator in Howard County, MD. I am delighted to be a part of this virtual conference and am looking forward to networking with other participants!	Name/city ID preface	10N-9
2:63) 31-OCT-2000 14:36 Larry Osthus (osthus) Hello! I'm Larry Osthus. I am the mathematics consultant at Heartland Area Education Agency 11 in Des Moines, IA. I look forward to the discussion on assessment\ aligned with standards and benchmarks. The format for this conference is interesting, and I look forward to seeing how it unfolds.	Name/city ID preface	10N-7
2:64) 31-OCT-2000 15:26 Mary M. Sullivan (mmsullivan) Greetings-- I'm Mary Sullivan, a faculty member with joint appointments in Mathematics and Educational Studies at Rhode Island College. In addition to teaching content courses to preservice elementary and middle school teachers (and other math students) I teach our Practicum courses and supervise our secondary student teachers.	Name/city ID preface	10N-9

Narrative	Analysis Categories	Code Line Count
This is an interesting way to conference!!		
2:65) 31-OCT-2000 16:06 Johnny Lott (lott) Hope everyone is having a great Halloween! I'm Johnny Lott and teach at the University of Montana Department of Mathematical Sciences. Lately I'm working on Figure This! for NCTM (see <a href="http://www.figurethis.org">www.figurethis.org</a> ) and Mathematics Education Dialogues (see <a href="http://www.nctm.org/dialogues">www.nctm.org/dialogues</a> ). I'm looking forward to the rest of the conference.	Name/city ID preface	10N-8
2:66) 31-OCT-2000 16:14 Rick Norwood (rnorwood) Hi, I'm Rick Norwood, at East Tennessee State University. I'm currently teaching a course called Logic, Problem Solving and Geometry to K-8 education majors. I'll be on one of the panels starting Nov 6.	Name/city ID preface	10N-5
2:67) 31-OCT-2000 16:32 Sue Fountain (susie40220) Hi, I'm Sue Fountain. I teach Algebra 2 and AP Stats in Louisville, Kentucky at Louisville Male High School. I'm currently involved in a project to explore the Japanese idea of lesson study and would be interested in knowing if any others are working on that.	Name/city ID preface	10N-6
2:68) 31-OCT-2000 17:29 Janice Reutter (math) Hi! I'm Janice Reutter, second grade teacher at Medicine Lodge Primary School, Medicine Lodge, Kansas. This is a small town (our claim to fame is Carry Nation) about 90 miles southwest of Wichita, near the Oklahoma border. I have over 25 years of teaching experience but know there is always more to learn. I'm looking forward to this experience.	Name/city ID preface	10N-8
2:69) 31-OCT-2000 17:40 Carey Bolster (bolster) Hi, I'm Carey Bolster. I am the guy that helped cook up this event idea and found funders that have the vision (and the trust) to make this first-time-ever-event happen! Thus, through	Name/city ID preface	10N-21

Narrative	Analysis Categories	Code Line Count
<p>the support of a lot of people, we're here! I am excited to be part of MathWeb 2000. I'm sure I'll be introduced to a lot of new ideas and wonderful teachers! By way of other projects I've worked on, I was the Project Director of PBS Mathline, and now am the Senior Math Consultant of PBS Teacherline, which-in partnership with NCTM- will offer the NCTM Academies through the Web. I also am Co-PI on Modeling Middle School Mathematics, which will utilize video and on-line components to illustrate the NSF funded middle school projects. For now... I'm looking forward to interacting with you as we participate in MathWeb 2000. Above all, I love kids, teachers and mathematics! I'm looking forward to this event!!!!!!</p>		
<p>2:70) 31-OCT-2000 17:50 vodene schultz (vodene) Hello, I'm Vodene Schultz. I work as a mathematics facilitator for El Paso Independent School District. We've had some experience in implementing reform curriculum and providing staff development to implement best practices in mathematics instruction. El Paso is on the border with Mexico and our student population is 70% hispanic with the majority having English as their second language. We are a large urban area.</p>	Name/city ID preface	10N-10
<p>2:71) 31-OCT-2000 18:40 Brooke Bertholet (brooke) Hi. My name is Brooke Bertholet. I am a Fifth Grade teacher in an International School in eastern Spain. All of my students are being facilitated in Mathematics in a Second Language, and I am here to learn how to better assess and guide their own learning through the sharing of your experience. I would appreciate if anyone could offer suggestions as how to further enhance the communication of mathematical ideas, how to assess "open-ended" problem solving, and how to provide a complete overview of a student's achievement which isn't geared to successful test completion. Ideas on how to extend spatial reasoning exercises through geometry during each week of the academic year would be</p>	Name/city ID preface	10N-20

Narrative	Analysis Categories	Code Line Count
<p>appreciated as well. I am pleased to be in such fine company and look forward to communicating with as many of you as possible during these three weeks. Thanks.</p>		
<p>2:72) 31-OCT-2000 20:28 Steve Leinwand (sleinwand) Hi you all - I'm Steve Leinwand. I am a mathematics consultant with the Connecticut Department of Education and one of the people that Carey Bolster convinced to try out this exciting new format. As a result, you can find some of my ideas at Workshop 2. I welcome your comments, questions and suggestions.</p>	Name/city ID preface	10N-8
<p>2:73) 31-OCT-2000 21:09 Leslie Ercole (ercole) Hi, I'm Leslie Ercole. I teach in the Northeast Kingdom of Vermont. I am currently teaching 6-8 grade mathematics. I am using the Mathscapes curriculum and love it! I am currently a part of the Vermont Math Initiative which is assisting math teachers in Vermont by increasing our math content and teacher leadership skills. It is a masters program in math education K-6 from UVM. I hope to learn more about math that is taking place throughout the classrooms of this country and Canada. I have an interest in student assessment. Looking forward to the next few weeks.</p>	Name/city ID preface	10N-13
<p>2:74) 31-OCT-2000 21:42 Rosemary Beck (rbeck) Hello everyone!! My name is Rosemary Beck and I am from Tucson Arizon. I wear two hats in my district. 1/2 time I teach math to "lower achieving" fourth and fifth grade students. The other half, I work as the district Math Specialist. In that capacity I am facilitating the adoption of new math text books and assist teachers in preparing students to take our state assessment. I am hoping to find many ideas that will assist me with both of these major projects.</p>	Name/city ID preface	10N-11
<p>2:75) 31-OCT-2000 21:48 Bob Mathews</p>		

Narrative	Analysis Categories	Code Line Count
<p>(bmathews) Howdy ya'!!! I'm Bob Mathews, and am a former Texas high school math teacher. I now live in Fredericksburg TX, and work for Design Science (the Equation Editor &amp; MathType people). Stop by the Main House &amp; say hi. I'm looking forward to many years of successful online conferences, so pass the word!</p>	Name/city ID preface	10N-7
<p>2:76) 31-OCT-2000 22:07 Teresa Ballard (tballard) Hi! I am Teresa Ballard I teach high school math in Battle Creek Michigan. We are using Core-Plus materials as well as what we call "strand" math, that is, non integrated. Currently, I am on sabbatical with the Christa McAuliffe Fellowship to coach math teachers in our district grades 6-12. I am excited about this new way of professional development and hope to learn much and "meet" many people.</p>	Name/city ID preface	10N-9
<p>2:77) 31-OCT-2000 22:10 Sandy Ross (sandyross) Hello- I'm Sandy Ross, and I teach at Clark Fork Jr./Sr. High School in Northern Idaho. I teach 7th math and Alg A and B, in addition to junior high science. No snow yet. I have a long term interest in improving math assessment, and on-line activities.</p>	Name/city ID preface	10N-6
<p>2:78) 31-OCT-2000 22:14 Christine Palmer (cmpalmer) Hello. I am Chris Palmer, a seventh grade math and prealgebra teacher from Perkiomen Valley Middle School, in Collegeville, PA. For a number of years, I have been communicating, on-line, with the teachers and pre-service teacher trainers of the Australian Association of Mathematics Teachers (AAMT). The AAMT has sponsored an annual "virtual conference" for the last three years. I am thrilled to see that the NCTM is moving in this direction, since I find both the e-mail and virtual conference discussions (practical and philosophical) to be quite challenging and informative.</p>	Name/city ID preface	10N-13

Narrative	Analysis Categories	Code Line Count
<p>2:79) 01-NOV-2000 01:33 Heidi Grabauskas (heidi)  Pleased to meet all of you. I am Heidi Grabauskas, an e-secondary educator for a charter school in Ohio. To the engineer who used to teach topology to the kids, I recently did a field trip to a maze and I incorporated topology in the lesson. Maybe you have some tips. I will have to look you up. I am anxious to see how an econference works. From what I see so far, it is great!</p>	Name/city ID preface	10N-9
<p>2:80) 01-NOV-2000 01:47 Jenny Salls (jsalls)  Hi! I'm Jenny Salls from Sparks, Nevada. I teach high school mathematics and was previously my district math coordinator. I'm fascinated by the prospect of on-line professional development and am looking forward to seeing how this plays out.</p>	Name/city ID preface	10N-6
<p>2:81) 01-NOV-2000 09:53 Amy Puff (amypuff)  Hi! My name is Amy Puff. Since having begun my teaching career in Massachusetts 17 years ago, this is my first year away from the classroom! Even though I have shifted away from the classroom experience for a time, I am happy to be working on a federally-funded math project with MCET in Cambridge, MA. We are striving to offer meaningful math support for teachers at the PreK - 8 level through the use of technology... I want to experience on-line learning firsthand. Also, I'm thrilled to interact with others from various parts of the US and the world who care about educating children and who share in the pleasure of teaching and learning math!</p>	Name/city ID preface	10N-15
<p>2:82) 01-NOV-2000 10:08 Anne Dorsey (annedorsey)  Hi, I'm Anne Dorsey. I teach Integrating Math in the primary grades to our seniors at the University of Cincinnati. I truly enjoy working with them. I would be interested in hearing from K-3 teachers about what they think student teachers and beginning teachers need as they learn to work with young children's developing understanding of mathematics.</p>	Name/city ID preface	10N-8

Narrative	Analysis Categories	Code Line Count
<p>2:83) 01-NOV-2000 11:54 Nora Werme (nwerme)  Hi, I'm Nora Werme. I'm finishing up my Master's in Elementary Ed. from a university in Virginia, while I currently reside in Massachusetts (crazy but true!). I'm currently taking a class in Curriculum and Instruction, and my big project this semester is to compare NCTM standards to Massachusetts Curriculum Frameworks (1996 and 2000 editions). Ideas, anyone? Thought this conference might broaden my scope.</p>	Name/city ID preface	10N-10
<p>2:84) 01-NOV-2000 12:30 Terry Souhrada (terryas)  Hello. My name is Terry Souhrada. I have been involved in mathematics education in Montana for 27 years. I taught grades 6-12 for 18 of those years. From 1992-98 I worked in the SIMMS Integrated Mathematics Project which developed materials for a secondary reform curriculum. Currently I am teaching mathematics education courses at the University of Montana. I am excited to see how well this electronic conference format works.</p> <p>If you wish to get more information on the SIMMS mathematics curriculum you can click on the address below:  <a href="http://www.montana.edu/wwwsimms/">http://www.montana.edu/wwwsimms/</a></p> <p>If you wish to get more information on the University of Montana you can click this address: <a href="http://www.umt.edu">ttp://www.umt.edu</a></p>	Name/city ID preface	10N-17
<p>2:85) 01-NOV-2000 13:56 Susan Doherty (squinnxx)  Hello everyone again!! It's great to see so many people signing on and saying hello. If you have trouble accessing anything in the conference please let me know in the Help Desk item in the Arrival Harbor. As you have probably discovered, this is a great place to connect with other educators. Feel free to respond to each other here and in the Main House sessions.</p>	Teacher initiated discussion w/student	11d-8

Narrative	Analysis Categories	Code Line Count
2:86) 01-NOV-2000 14:00 Kim Kelly (kkelly) Hi; I teach mathematics at Delsea Regional High School in Franklinville, NJ. I have been teaching for about 10 years. I am always looking for fresh ideas to implement in my classroom.	Name/city ID preface	10N-5
2:87) 01-NOV-2000 14:18 Marla Gessford (marla) I am an elementary teacher who just took a major step into a new position. I am now the Math and Science Instructional Consultant for my district in the Mid Willamette Valley of Oregon. I am working to organize the math standards into a format we call "Implementation Indicators", highlighting best practices for math.	Name/city ID preface	10N-7
2:88) 01-NOV-2000 14:54 Darren Kuropatwa (darrenk) Hi. I'm Darren Kuropatwa from Winnipeg, Manitoba in Canada. I teach grades 9-12 mathematics. I'm looking forward to learning about interesting and innovative assessment practices as well as some non-standard assessment items I can use in my classroom.	Name/city ID preface	10N-6
2:89) 01-NOV-2000 15:10 Susan Doherty (squinnxx) Thanks to a participant catch, I've made some changes to Sheila Vice's workshop 1 to make it more accessible. If you've visited already, check it out again. If you're just arriving, be sure to pop over to the Main House.	Sharing Experiences	11c-5
2:90) 01-NOV-2000 16:17 Ricky Carter (rickycarter) Hello, My name is Ricky Carter and I split my time between working for the ARC Center (one of the NSF projects to support the dissemination and implementation of the standards based elementary math curricula) and Lesley University (teaching courses in Lesley's Tech in Ed online Master's program). One of the activities the ARC Center supports is online discussion groups of teachers who are implementing the new curricula and assessment is a common topic! I am curious	Name/city ID preface	10N-13

Narrative	Analysis Categories	Code Line Count
about how much depth can be achieved in this kind of environment.		
2:91) 01-NOV-2000 17:39 Lina Kind (sunshine) Hi, My name is Lina Kind. I teach Grade One in Calgary, Alberta Canada. I have taught grade one for twelve years. I have been on different committees for inservicing Math to our school District. I am really excited about hearing and learning about any new ideas that can be found out from this type of a conference.	Name/city ID preface	10N-7
2:92) 01-NOV-2000 18:06 Diane Kunowski (kunowski) Hi- I'm Diane Kunowski. I teach Algebra II and Advanced Math at Minden High School in Minden, Louisiana. An online conference sounds like such a good idea! I'm looking for new ideas and inspiration.	Name/city ID preface	10N-5
2:93) 01-NOV-2000 18:31 Pamela D. Leger (bayoumath) Hello! I'm Pam Leger. I teach Algebra I and geometry in Church Point, LA. I look forward to sharing ideas that will help me to integrate the standards into my classroom.	Name/city ID preface	10N-4
2:94) 01-NOV-2000 21:29 Helene Harris (helene) Hello, my name is Helene Harris. I teach elementary math in Hardin County, Kentucky. I'm just learning my way around computers and the internet. I thought this conference may be beneficial in more ways than one.	Name/city ID preface	10N-5
2:95) 01-NOV-2000 21:52 William Bramlett (advocate_bill) Hello! I'm Bill Bramlett and I am a retired math teacher now a part of the HPLEARN Math Advocate group working at improving math education through technology. In addition, I teach one course at New Mexico State University per semester. This semester I am teaching geometry and other math concepts to preservice elementary teachers. In my 23	Name/city ID preface	10N-13

Narrative	Analysis Categories	Code Line Count
years in education, I have taught everything from basic math through AP Calculus. I think the technology available, or soon to be available, poses great questions about assessment in mathematics.		
2:96) 01-NOV-2000 23:11 Mary Downey (mdowney) Hi, I'm Mary Downey and I teach at Ursuline High School in Youngstown, Ohio. I've never done an on-line conference so I'm looking forward to learning many new ideas. I'd like to know more about assessment in my classroom and different forms of assessments.	Name/city ID preface	10N-6
2:97) 01-NOV-2000 23:54 Erin O'Hara-Rines (ohara) Hello, I'm Erin O'Hara-Rines. I am a third grade teacher in Ontario, Oregon. Ontario is perched on the Oregon-Idaho border. I am in my 15th year of teaching (have taught all grades K-3), and I've been very interested in improving my mathematics instruction. As part of my master's degree work, I'm currently involved in an action research project investigating the role communication plays in math achievement. I'm particularly interested in that area in regards to this conference.	Name/city ID preface	10N-11
2:98) 02-NOV-2000 01:33 Remy Tze Yin Poon (remypoon) hi, my name is remy poon. I am a title 1/ math teacher in seattle, wa. I love math.	Name/city ID preface	10N-2
2:99) 02-NOV-2000 17:04 Judy Parker (curmatch) Hi, I'm Judy Parker. I am our district's K - 8 Math and Science Resource Teacher in Phoenix, AZ. Our district is in the process of developing some math assessments so I am looking forward to learning a lot through this conference.	Name/city ID preface	10N-6
2:100) 02-NOV-2000 17:33 Roger Blake (rock) Hi Everyone, I am Roger Blake and I live in	Name/city ID preface	10N-20

Narrative	Analysis Categories	Code Line Count
<p>Brownwood, Texas -- in central Texas. I am a math instructor at a 2-year technical college where I teach college algebra and remedial math. Two concerns brought me to Mathweb and those are the increasing number of beginning college students who have virtually no mathematical skills. Some of my students are recently out of high school and others are adults in their 30's and 40's, and the majority of these students cannot add fractions. About 60% of my students are single parents, 70% are in some remedial class, and 50% are in the poverty level, but they are all 100% wonderful, and they want to learn math! The other issue is how to effectively use technology in the math classrooms because I want my students to learn. I am looking forward to hearing lots of ideas from you and to discuss education issues.</p>		
<p>2:101) 02-NOV-2000 17:50 Ann Lawrence (alawrence)  This message is for Craig Morton. Craig--This is Ann Lawrence. I tried to resond to your message here at the pool, but the e-mail was returned to me. How are you? Send a message to me at AnnLTeach@aol.com. Hope to hear from you--</p>	Name/city ID preface	10N-6
<p>2:102) 02-NOV-2000 20:59 Lisa Kimball (lisa)  Hi! I'm another of the Group Jazz crew, working with Susan. I am fascinated by this discussion because I taught 4-6 grade many years ago and assessment was a challenge then too.  I live in washington, DC where we are having the best Fall weather I can ever remember!</p>	Name/city ID preface	10N-6
<p>2:103) 02-NOV-2000 23:18 Janine Gibson (pray)  Hello, my name is Janine Gibson and I teach basic math to junior college students at Virginia College at Birmingham. www.vc.edu  I teach on-line classes as well as on-campus classes. I am looking forward to learning about using technology in assessment, and many other topics. It is exciting to have</p>	Name/city ID preface	10N-9

Narrative	Analysis Categories	Code Line Count
this opportunity to participate in a conference on-line!		
<p>2:104) 03-NOV-2000 12:06 Jane Murphy (janemurph1)            Good Day to My Fellow Conference Friends! My name is Jane Murphy. I teach general mathematics and college algebra at Virginia College in Birmingham in real classrooms and a virtual one as well.) I am originally from Conroe, Texas. Since my husband has been in the military for 12 years, I have had varied experiences to teach mathematics. These range from tutoring to teaching in public and private junior/senior high schools to junior college level. I love teaching MATHEMATICS!!! One of my main areas of interests is the prevalence of Math Anxiety in students-no matter the age or ability level. I find the aspect of an online conference exciting. I see we are in great company with the background of professionals from around the country and the world:)</p>	Name/city ID preface	10N-18
<p>2:105) 03-NOV-2000 15:31 Jeannette Wilt (dobbsferry)            Hello! My name is Jeannette Wilt and I teach at Dobbs Ferry High School in NY. I am so impressed by the number of people registered, and from so many different places in the world! We are going crazy over here trying to keep up with the new State changes. Anyone, please, who knows of a good textbook for Form A and B, help!</p>	Name/city ID preface	10N-8
<p>2:106) 03-NOV-2000 17:05 Rick Norwood (rnorwood)            Really, the hardest K-8 math is learning the multiplication table. Any student who knows the multiplication table can be taught everything else in less than a year. I think the most important thing is to distinguish understanding from trivia. Nobody needs to add <math>22/301 + 77/93</math>, but everyone should understand that <math>1/2 + 1/4</math> means that you get half way there, and then cover half of the distance remaining, so you're a three quarters of the way home, and have one quarter of the</p>	Name/city ID preface	10N-12

Narrative	Analysis Categories	Code Line Count
way to go.		
<p>2:107) 04-NOV-2000 00:32 Anna Maria Licameli (alicameli)  My name is Anna Maria Licameli and I teach math at a small private school in Short Hills, NJ. I teach "enrichment math" in 2nd-5th grade, prealgebra in 6th, and algebra in 7th and 8th. Currently we are working on developing effective approaches for keeping our more mathematically able students turned on to math class without having a pull-out program for them.</p>	Name/city ID preface	10N-9
<p>2:108) 04-NOV-2000 19:31 Angie Marie Harding (angieharding)  Hi, I'm Angie Harding from Regina, Saskatchewan (Canada). I am the K-12 Math/Science Consultant for our school division. I have been active in mathematics education for nine years and am looking forward to this on-line conference. Our school division is focusing on authentic assessment and I hope Mathweb 2000 will provide me with additional information on assessment. As well, it will be great to hear from everyone registered.</p>	Name/city ID preface	10N-11
<p>2:109) 05-NOV-2000 05:01 Daniel Lemay (lemayd)  Hi, I am Dan Lemay. I teach math at Oxbow High School in Bradford, VT. I've been teaching math for 13 years now. We implemented Level 1 of SIMMS IM this year and I am having a blast working with students using those materials. I have also been pretty active in VT's portfolio assessment program.</p>	Name/city ID preface	10N-7
<p>2:110) 05-NOV-2000 10:39 Janet Sanders (jsanders)  Hi, I am Janet Sanders. I teach 6th grade math and 8th grade math in Llano, Texas. This is my first year teaching (second career), and I am trying to learn everything I can about teaching. This online conference is great for those of us in outlying areas. I cannot go to a national conference for awhile because of</p>	Name/city ID preface	10N-10

Narrative	Analysis Categories	Code Line Count
family commitments. This way I have access to the latest thinking from all of you concerned about the future of mathematics in our schools.		
<p>2:111) 05-NOV-2000 12:14 Mary Alice Hatchett (mahat)</p> <p>Hello from Round Rock, Texas. I am Mary Alice Hatchett, Director of Mathematics K-12. Our fast growing district has 25 elementary campuses, 7 middle schools, 4 high schools, &amp; 1 alternative school. Last year we oy)Ad 1 new elem &amp; 1 new high school - both are now over their capacity. August 2001, we will open 2 new elem, 1 middle school &amp; 1 high school. With a growing district - come students &amp; teachers new to our philosophy of teaching and assessment. This, consequently, becomes a challenge!</p>	Name/city ID preface	10N-12
<p>2:112) 05-NOV-2000 13:16 Kristina Lasher (kristina)</p> <p>Hi! My name is Kristina Lasher. I've been reading everyone's thoughts and questions throughout the week, but haven't gotten around to introducing myself. I am an elementary teacher who is now working full time at the Math Forum (<a href="http://mathforum.com">http://mathforum.com</a>). I work on the Teacher2Teacher project and the Elementary Problem of the Week. I hope to do more thinking about assessment and reform in mathematics education, and I'd like to meet more teachers who are interested in these topics.</p>	Name/city ID preface	10N-12
<p>2:113) 05-NOV-2000 22:18 Mary Cummings (mcummings)</p> <p>Hi! My name is Mary Cummings. I teach 8th grade math in a middle school just south of Kansas City, Mo. One of our builing goals for this year is to improve our state test scores. I hope to gain information and new insights from this conferen</p>	Name/city ID preface	10N-6
<p>2:114) 06-NOV-2000 08:05 Denise Tuck (dtuck)</p> <p>I am a Teacher On Special Assignment for Capital School District in Dover, Delaware.</p>	Name/city ID preface	10N-5

Narrative	Analysis Categories	Code Line Count
Math and Technology are two of my areas. I will be interested in seeing how this type conference works.		
2:115) 06-NOV-2000 11:36 Beth Skipper (bskipper) Hello Everyone- On behalf of NCTM let me extend a warm welcome to all of you who are pioneering this new conference format. I am Beth Skipper, I work with the NCTM Academy for Professional Development. I invite you to visit our web site <a href="http://www.nctm.org/academy">http://www.nctm.org/academy</a> to learn more about this exciting new project. In the meantime, enjoy the conference.	Name/city ID preface	10N-9
2:116) 06-NOV-2000 13:03 Karen Rothschild (krothsch) Hi- I'm Karen Rothschild, K-5 math specialist at Penn Charter School in Philadelphia. This looks like fun.	Name/city ID preface	10N-3
2:117) 06-NOV-2000 15:19 Geraldine Santarelli (gsantarelli) Hi all!! I am Geri Santarelli, the 6-12 math teacher consultant for Kenosha Unified School District #1. Our district is focusing on standards-based instruction and is piloting a reporting system using our district standards and benchmarks at the middle level this year. I am anxious to participate in Mathweb 2000 and hopefully get some new ideas to pass on to our teachers.	Name/city ID preface	10N-9
2:119) 06-NOV-2000 19:31 Andrea Gladkowski (andrea) Hi everyone, I am an eighth grade teacher in Hooksett, New Hampshire. This is only my second year teaching math, so I hope to learn many new and exciting things.	Name/city ID preface	10N-4
2:120) 06-NOV-2000 20:51 Pam Benne (pambenne) Hello! I'm a late comer - almost forgot about this amidst Halloween and Parent/Teacher	Name/city ID preface	10N-8

Narrative	Analysis Categories	Code Line Count
<p>conferences. My name is Pam Benne and I'm a nationally certified teacher from Welch, Oklahoma presently teaching 7th math, algebra I and II, trigonometry/precalc, and AP calculus! No wonder I'm behind! I'm excited to find out more about the workshops!</p>		
<p>2:121) 07-NOV-2000 00:12 Carol Johnson (caroljohnson)  This is overwhelming, but exciting! I'm Carol Johnson and I am currently the Math and Science Content Specialist for our school district in a suburb of Chicago - LaGrange Park, Illinois. I taught math and science for 9 years (after raising three children and receiving my bachelors degree at the age of 40). Our K-8 district is currently going through the process of establishing benchmarks and then the assessments for those benchmarks. I hope to gain some valuable information to use in this process and network with others. We are using UCSMP Everyday Math in grades K-6, UCSMP Transitions in grade 7 and reviewing what to do with grade 8. HELP!</p>	Name/city ID preface	10N-15
<p>2:122) 07-NOV-2000 06:19 Brian Drayton (briand)  Hello -- I am Brian Drayton, currently working at TERC, a nonprofit in Cambridge MA that is probably best-known in the math-ed world for developing the Investigations curriculum. My own work at TERC has mostly been related to science (curriculum and teacher professional development), electronic communities, and systemic reform. I am interested in three things, as I wander thru MathWeb: [1] What are trends in ed reform that show up in the discussions and messages posted here? [2] can I find any clues about better ways to integrate science and mathematics? [3] What works and what doesn't about this "virtual conference" event?</p>	Name/city ID preface	10N-15
<p>2:123) 07-NOV-2000 07:35 Cindy Schimek (cschimek)  Hi! I'm Cindy Schimek and am the Secondary Math Instructional Specialist in Katy, Texas. Katy is a suburb of Houston and is a very fast</p>	Name/city ID preface	10N-7

Narrative	Analysis Categories	Code Line Count
growing area with 2-3 new schools opening every year. I'm very excited about attending a virtual conference. Assessment has always been a special interest of mine.		
2:124) 07-NOV-2000 08:05 Susan Pruet (pruet) Hi! I'm Susan Pruet from the Mobile, Alabama area and direct the Maysville Mathematics Initiative with teachers in four elementary schools in the inner-city community called Maysville. I'm excited about this professional development format - it's great seeing so many interesting participants signed up.	Name/city ID preface	10N-7
2:125) 07-NOV-2000 09:41 Jackie Mitchell (jmitchell) Hi I'm Jackie Mitchell- I work for the Maine Dept of Education as the Math Specialist and I also work on the Math portion of the Maine Educational Assessment. I am delighted to join all of you (some old friends and soon to be new friends) Thanks Carey for your vision I look forward to this journey.	Name/city ID preface	10N-7
2:126) 07-NOV-2000 12:06 Bonnie Spence (spence) Hi I am Bonnie Spence teaching my last of 5 years abroad before returning to Missoula Montana in August 2001. I currently teach at Lincoln American International Middle School in Buenos Aires, Argentina. Unfortunately my computer time has been limited due to IOWA testing (ugh) and I am just now getting into the conference. I look forward to some fresh ideas, as professional development here is rare and I am feeling very stagnant since I left US and Europe.	Name/city ID preface	10N-11
2:127) 07-NOV-2000 15:40 Tamela Randolph (trandolph) Hi. I am Tammy Randolph, and I work at Southeast Missouri State University, Cape Girardeau, MO. At Southeast I am a member of the Department of Mathematics and currently work with preservice and inservice teachers K-12. :) Unfortunately I have been busy with	Name/city ID preface	10N-11

Narrative	Analysis Categories	Code Line Count
<p>preparing our NCATE folio and my own promotion papers, so this is the first time I have bene able to join all of you. I am looking forward to meeting old friends as well as making new ones.</p>		
<p>2:128) 07-NOV-2000 15:59 Ellen Cooch (ecooch) Hi, I'm Ellie Cooch, 8th grade math teacher in Spearfish, SD. It's a snow day today so here I am. We are teaching Connected Math here so would love to communicate with others using the program.</p>	Name/city ID preface	10N-5
<p>2:130) 07-NOV-2000 17:41 Virginia Heal (vheal) Hi folks! My name is Nina Heal. I teach geometry and algebra to eighth graders. I love middle school. It's a crazy age, but they are a lot of fun, too. Our school is on the eastern shore of MD and we only have a bit over 300 students. I use Geometer's Sketchpad, HyperStudio, and the internet in math class.</p>	Name/city ID preface	10N-7
<p>2:131) 07-NOV-2000 18:20 Richard B. Ruth (rbruth) Hi, I'm Dick Ruth from Shippensburg University in Pennsylvania. I teach a secondary mathematics methods class and am having my students sit in on the discussion as I work my way around MathWeb2000. I hope the conference is a success.</p>	Name/city ID preface	10N-6
<p>2:132) 07-NOV-2000 20:46 Glenn Allinger (allinger) Hi Everyone! I'm Glenn Allinger, recently retired mathematics educator from Montana State University-Bozeman who also co-chaired Professional Development activites for the SIMMS Integrated Mathematics program for seven years. Visting classrooms in many states in support of teachers implementing NCTM's PSSM Standards materials demonstrated to me that changing assessment practices is a VERY difficult task for individual teachers and for schools. I am delighted to see this virtual conference tackle that subject with</p>	Name/city ID preface	10N-20

Narrative	Analysis Categories	Code Line Count
<p>theoretical and practical ideas which promote stimulating dialogues. At a meeting last weekend of the NCTM Professional Development and Status Advisory Committee, there was much discussion about viewing Mathweb2000 as a model for delivery of future NCTM professional development activities including Academies and conferences. Keep up the good work!!!</p>		
<p>2:133) 08-NOV-2000 11:02 Erica Waitoller (waitoller) I am Erica and I am a primary school teacher at Florida Day School, Argentina. I am very interested in sharing different points of view about teaching mathematics and developing thinking dipositions. My challenge is to help my students understand mathematical concepts and reach, or even improve, our standards. I am looking for differnt ways of assessment practices.</p>	Name/city ID preface	10N-9
<p>2:134) 08-NOV-2000 13:29 Bill Link (billink) Hi--I've taught high school math for 30 years, the last 24 at Thompson Valley High School. I retired in June and am now working at as Math Advocate for HP. My role with HP is to offer training and advice for teachers with all of the HP calculators. One reason I am interested in this conference is to find out how teachers are dealing with the CAS system on many of the new graphics calculators. Is it a positive addition to your classroom?</p>	Name/city ID preface	10N-10
<p>2:135) 09-NOV-2000 16:39 Claire Elaine Battersby (cbear1177) Hi -My name is Claire Battersby and I am an Australian accessing this site from a small country town in South Australia called Mount Gambier. I have been teaching maths for 5 years at years 8 - 12. We are just undergoing changes in our curriculum that dictate graphics calculators need to be used in senior courses. I'd love to hear from others that have been through implementing these and worked out how to access their use!</p>	Name/city ID preface	10N-10

Narrative	Analysis Categories	Code Line Count
<p>2:136) 10-NOV-2000 12:10 Margaret A Biggerstaff (mab)  Hi! I am Margaret Biggerstaff from Minneapolis Public Schools in Minneapolis, Minnesota. This year I am on special assignment to the University of Minnesota College of Education Curriculum and Instruction Department. My role is to assist secondary mathematics instructors in the process of integrating technology in their methods courses for preservice teachers. I am registered for this conference because I have a strong interest in assessment. I hope to find new ideas to share with colleagues in the school district and here at the university.</p>	Name/city ID preface	10N-12
<p>2:137) 10-NOV-2000 15:26 Charles E. Baker (eddiebaker)  Hi, My name is Eddie Baker. I am part of the Professional Development Institute at San Diego State University. PDI and San Diego City Schools have teamed up to focus on improve teaching and learning of mathematics. The Math Specialists in our program teach only mathematics for three 90-minute periods in grades 4,5 &amp;6. They have an additional 90 minutes each day for on-site professional development time to reflect on their practice and analyze student work. Our Math Specialists are participating in content and pedagogy courses at SDSU. I teach the math content courses for the teachers.</p>	Name/city ID preface	10N-14
<p>2:138) 10-NOV-2000 21:51 Nancy R. Wilson (nancywa)  Hi, My name is Nancy Wilson Araujo. I teach high school mathematics in Kimberley, BC, Canada. I signed on late, but everything that I have seen has been terrific. This is a great idea.</p>	Name/city ID preface	10N-4
<p>2:139) 12-NOV-2000 17:00 Richard Frazita (professor)  Hi! I am Dick Frazita. I recently retired from full time teaching elementary and special education teachers (UG/G) at Buffalo State. I am presently teaching part time and am also involved with a NYS VESID Technical</p>	Name/city ID preface	10N-8

Narrative	Analysis Categories	Code Line Count
Assistance Center (math & reading initiative). My interest is with the struggling elementary level math student.		
2:140) 12-NOV-2000 18:04 Christinia Frazier (ghsfraz) Hi! My name is Christinia Frazier. I am a mathematics teacher at the Philadelphia High School for Girls. It is one of the oldest, and maybe the only one left, public high schools for girls in the country. Anyway, I teach all levels of mathematics. I am also an AP consultant for the College Board and also do work for the SAT II Test committee. I have been struggling as we all have been with the topic of assessment and decided to try this out. Hey, Bill Link I just saw your name as I scrolled down the list of participants. Its nice to hear.... or see a friendly name. I too use HP products and would be interested in anyones opinion on their use of calculators in the classroom and the role they play now in assessment.	Name/city ID preface	10N-16
2:141) 14-NOV-2000 00:38 Lisa Netuschil (nts4ac) Hi, my name is Lisa Netuschil. I am currently attending a math leadership class at the University of Nevada, Reno. I was hoping to gain insight in several areas of maths so I signed up for the web 2000.	Name/city ID preface	10N-5
2:142) 14-NOV-2000 10:34 Ann Harsh (aharsh) Hello, everyone! I am Ann Harsh, K-8 Mathematics Coordinator in Hattiesburg Public Schools, Hattiesburg, Mississippi. I have had a wonderful time participating in this conference on-line. I have enjoyed reading the various comments and find I am not alone as I try to promote mathematical literacy in my district. Keep talking or should I say writing.  Assessment is a wonderful topic to discuss. Who knows we may be able to tackle some of today's issues in a more informed way!	Name/city ID preface	10N-11

Narrative	Analysis Categories	Code Line Count
<p>2:143) 14-NOV-2000 14:56 Sharon Taylor (sharontaylor)  Hello, all. I am Sharon Taylor, a retired secondary mathematics teacher from Baton Rouge, LA. I am now living in CA and am the Professional Development Curriculum Manager for Key Curriculum Press. We have been providing professional development experiences for teachers and are very interested in adding an on-line component to our offerings. This conference should give me good ideas on how that works in addition to giving me assessment ideas to share in our workshops.</p>	Name/city ID preface	10N-12
<p>2:144) 17-NOV-2000 15:59 Jim Willis (jwillis)  Hi y'all, I'm Jim Willis from Nothfield, Vermont. I have been teaching high school math for 36 years( I was born at a very early age ). We implemented the SIMMS math curriculum last year, and it has changed my career around. I feel as though I am a very old beginning teacher. It is fun to come to school every day. Thanks so much to the folks who have brought us this great conference. What an outstanding opportunity.</p>	Name/city ID preface	10N-10
<p>2:145) 18-NOV-2000 23:58 Susan Jordan (leighjordan)  Hello, I am Susan Jordan. I am a third grade math teacher at John Will Elementaty School in Mobile, Alabama. I was one of the elementary teachers trained in the Maysville Math Iniattive the Susan Pruettt mentioned earlier. Math has always been my one true love and I look forward to any chance I have to imptove my teaching.</p>	Name/city ID preface	10N-7

**Sharing Experiences**  
**Name/city ID preface**  
**Teacher initiated discussion w/student**

**11c-10**  
**10N-1208**  
**11d-24**

**Poolside Café, Item 1**

**Table # 119: Poolside Café, Item 3, Math in the News**

Narrative	Analysis Categories	Code Line Count
<p>Math in the News Poolside Cafe Item 3</p> <p>Mathweb 2000 Center , Poolside Cafe , Item 3</p> <p>Item 3 28-OCT-2000 21:55 Susan Doherty (squinnxx)</p> <p>Here are a couple recent news articles, what's made your local paper?</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-2</p>
<p>3:1) 28-OCT-2000 21:55 Susan Doherty (squinnxx)</p> <p>How Tests Can Drop The Ball By Richard Rothstein</p> <p>MIKE PIAZZA, batting .332, could win this year's Most Valuable Player award. He has been good every year, with a .330 career average, twice a runner-up for m.v.p. and a member of each All- Star team since his rookie season.</p> <p>The Mets reward Piazza for this high achievement, at the rate of \$13 million a year.</p> <p>But what if the team decided to pay him based not on overall performance but on how he hit during one arbitrarily chosen week? How well do one week's at-bats describe the ability of a true .330 hitter?</p> <p>Not very. Last week Piazza batted only .200. But in the second week of August he batted .538. If you picked a random week this season, you would have only a 7-in-10 chance of choosing one in which he hit 250 or higher.</p> <p>Are standardized-test scores, on which many schools rely heavily to make promotion or graduation decisions, more indicative of true ability than a ballplayer's weekly average?</p> <p>Not really. David Rogosa, a professor of educational statistics at Stanford University, has calculated the "accuracy" of tests used in California to abolish social promotion. (New York uses similar tests.)</p>	<p>Sharing experiences</p>	<p>11c-105</p>

Narrative	Analysis Categories	Code Line Count
<p>Consider, Dr. Rogosa says, a fourth-grade student whose "true" reading score is exactly at grade level (the 50th percentile). The chances are better than even (58 percent) that this student will score either above the 55th percentile or below the 45th on any one test.</p> <p>Results for students at other levels of true performance are also surprisingly inconsistent. So if students are held back, required to attend summer school or denied diplomas largely because of a single test, many will be punished unfairly.</p> <p>About half of fourth-grade students held back for scores below the 30th percentile on a typical reading test will actually have "true" scores above that point. On any particular test, nearly 7 percent of students with true scores at the 40th percentile will likely fail, scoring below the 30th percentile.</p> <p>Are Americans prepared to require large numbers of students to repeat a grade when they deserve promotion?</p> <p>Professor Rogosa's analysis is straightforward. He has simply converted technical reliability information from test publishers (Harcourt Educational Measurement, in this case) to more understandable "accuracy" guides.</p> <p>Test publishers calculate reliability by analyzing thousands of student tests to estimate chances that students who answer some questions correctly will also answer others correctly. Because some students at any performance level will miss questions that most students at that level get right, test makers can estimate the reliability of each question and of an entire test.</p> <p>Typically, districts and states use tests marketed as having high reliability. Yet few policy makers understand that seemingly high reliability assures only rough accuracy - for example, that true 80<sup>th</sup> percentile students will almost always have higher scores than true 20th percentile students.</p>		

Narrative	Analysis Categories	Code Line Count
<p>But when test results are used for high-stakes purposes like promotion or graduation decisions, there should be a different concern: How well do they identify students who are truly below a cutoff point like the 30th percentile? As Dr. Rogosa has shown, the administering of a single test may do a poor job of this.</p> <p>Surprisingly, there has not yet been a wave of lawsuits by parents of children penalized largely because of a single test score. As more parents learn about tests' actual accuracy, litigation regarding high-stakes decisions is bound to follow. Districts and states will then have to abandon an unfair reliance on single tests to evaluate students.</p> <p>When Mike Piazza comes to bat, he may face a pitcher who fools him more easily than most pitchers do, or fools him more easily on that day. Piazza may not have slept well the night before, the lights may bother him, or he may be preoccupied by a problem at home. On average, over a full season, the distractions do not matter much, and the Mets benefit from his overall ability.</p> <p>Likewise, when a student takes a test, performance is affected by random events. He may have fought with his sister that morning. A test item may stimulate daydreams not suggested by items in similar tests, or by the same test on a different day. Despite a teacher's warning to eat a good breakfast, he may not have done so.</p> <p>If students took tests over and over, average accuracy would improve, just as Mike Piazza's full-season batting average more accurately reflects his hitting prowess. But school is not baseball; if students took tests every day, there would be no time left for learning.</p> <p>So to make high-stakes decisions, like whether students should be promoted or attend summer school, giving great importance to a single test is not only bad policy but extraordinarily unfair. Courts are unlikely to permit it much longer.</p>		

Narrative	Analysis Categories	Code Line Count
<p>3:2) 28-OCT-2000 21:56 Susan Doherty (squinnxx) An article from the 9.24.00 Washington Post...</p> <p>Montgomery Failing Its Students, Audit Finds</p> <p>Montgomery County's practices of grouping students by ability and often assigning weaker teachers to remedial classes have exacerbated a growing achievement gap that leaves some minority students behind, according to an audit of the county's math curriculum.</p> <p>"We're in effect running a segregated school system by our academic practices," said board President Patricia O'Neill after reviewing the audit by education consultants Phi Delta Kappa International. "I'm troubled. I'm outraged. I'm angry. We have to do something. It's time."</p> <p>If such segregation is happening in math, she said, it's likely happening in other academic subjects, in effect relegating certain students to a decidedly second-class education.</p> <p>Auditors conducting the three-month, \$100,000 study reached the same conclusion and suggested that the district put an end to the practice of tracking students by ability.</p> <p>"Ability grouping in Montgomery County looks more like racial segregation than anything else," said William K. Poston, one of the auditors. "We kept asking people why they did it and we got a variety of responses, none of which seemed to make a lot of sense. The answer is, often, it's easier for the teacher. But the aim isn't to make teachers' jobs easier. It's to make children learn."</p> <p>Montgomery County Superintendent Jerry D. Weast stopped short of recommending an end to such practices. He admits the system is broken, sorting kids into ability groups and then expecting little and giving less to those in the lower groups. But he is proposing to remedy that by training teachers better, streamlining the confusing curriculum and raising standards and expectations for the lowest achievers.</p> <p>"You're always going to have a range, so you</p>	<p>Sharing experiences</p>	<p>11c-202</p>

Narrative	Analysis Categories	Code Line Count
<p>have to target instruction to the needs of the child," Weast said. "If they lack exposure, we've got to catch them up. But I can't keep the faster-moving children down."</p> <p>The audit, requested by Weast as part of his plan to raise standards for minority students, has some sobering conclusions for the region's school districts which, like Montgomery, are battling to close the gap separating black and Hispanic students from their white and Asian counterparts.</p> <p>The audit found that ability grouping, which begins as early as third grade, often had little to do with ability and that placements were imprecise. And while students were expected to learn the same curriculum and take the same tests, the lower groups learned far less with teachers who often didn't know how best to teach them.</p> <p>The results on the test, then, became a self-fulfilling prophecy, with students in the lower tracks scoring lower than those in higher groups.</p> <p>In elementary school, the ability groups are often taught in the same classroom. By middle school, though, the students are separated into different classes, often with different course work, a practice that continues into high school.</p> <p>In visits to 27 schools and interviews with more than 100 students, teachers, principals and administrators in June, auditors found that once in the lower track, students tended not to move up. Nor were students in the lower track--who tended to not only be African American and Hispanic, but also poor--expected to do well.</p> <p>Auditors quoted one principal as saying: "Expectations are lessened for the lower groups. We slow down the pace." And another: "I put my weakest teacher with the low group because the teacher isn't strong in math."</p> <p>Auditors also found that the oldest textbooks--one series from 1985--were used in the lower track of classes.</p>		

Narrative	Analysis Categories	Code Line Count
<p>Further, the achievement gap is exacerbated by the way the school system allocates resources, auditors reported. Rather than send more dollars to schools with higher populations of disadvantaged students for more intensive academic work, the system distributes money based solely on enrollment.</p> <p>For example, Churchill High School receives \$439,000 a year, the second-highest sum in the county. Only 16 percent of the students at the Potomac school receive free and reduced-price meals, a measure of poverty. By contrast, Wheaton High School, with one-third of its students in poverty, receives \$293,000.</p> <p>And the scores at the two schools are worlds apart. Churchill's math scores on last year's college entrance Scholastic Assessment Test ranged from a low of 457 for African American students to 651 for Asian students. Wheaton's scores ranged from a low of 424 for African American students to 518 for white students.</p> <p>For the auditors, socioeconomic is critical. For every \$10,000 of family income, Poston and other researchers have found a 30-point increase in student scores.</p> <p>"What we're saying is, race, ability are irrelevant. What's operating in the achievement gap are socioeconomic factors that the system has to compensate for by allocating resources differently," Poston said. "Spend the money on greater intensification for underperforming kids, and studies show the kids will be pretty up to par by fourth or fifth grade.</p> <p>"But if the system accepts tracking and groups by performance levels in the early grades," he continued, "they perpetuate academic differences throughout a child's academic career."</p> <p>The findings, while disturbing, ring true to some Montgomery County math teachers, particularly those who teach the politically charged field of Algebra I.</p> <p>When county administrators decided a few</p>		

Narrative	Analysis Categories	Code Line Count
<p>years ago to mandate that 80 percent of ninth-graders take algebra, many teachers felt that the decision was purely political and didn't address the fact that students in lower tracks weren't adequately prepared.</p> <p>Pushing such students into algebra, when they had been neglected through elementary and middle school, has resulted not only in high exam failure rates--64 percent of ninth-graders taking the Algebra I final last January flunked--but disparate failure rates. Auditors found that African American and Hispanic algebra and geometry students, on average, posted far more failing grades, and only a handful received A's or B's.</p> <p>"The system produces nothing but frustration, anxiety and hatred for math," said Victor Weinstein, head of the math department at Northwest High School. "It's all quick fix, walk away and hope the problem goes away. That's not the way to deal with education. That's not the way to make kids successful."</p> <p>The audit and two other internal math studies point out that, because of a lack of direction and monitoring, the quality of math education is a function of geography: that it varies significantly from school to school and even from classroom to classroom.</p> <p>"In essence, principals and teachers who are achieving high student performance are doing so largely on their own," Weast wrote in a memo to the board, "based on the efficient use of resources and their inherent belief that all children can learn."</p> <p>That comes as no surprise to many parents. What is new, they said, is that the system has stopped denying that that's the case.</p> <p>"Unofficially, parents have seen this for years," said Susan Sellers, a vice president of the Montgomery County Council of PTAs. "This type of inconsistency has hurt kids, independent of dividing along socioeconomic lines."</p> <p>In tackling the problem, Weast is proposing</p>		

Narrative	Analysis Categories	Code Line Count
<p>extended school days and Saturday classes for struggling students and a complete redesign of the math curriculum, benchmarked against national and international standards, with clear and consistent guides for teachers to follow. He proposes more focused staff training to help teachers teach and expect better results from African American and Hispanic students, a thorough review of textbooks and board policies, and intensive monitoring.</p> <p>And in a sea change for the once-insular Montgomery County, Weast hopes to eliminate county-only testing, such as the criterion-referenced test and the instructional system in mathematics, or ISM, and focus more on state standards and expectations.</p> <p>Some teachers and critics have long argued that there are too many tests in Montgomery County and that teachers are overwhelmed and unclear as to what's important to teach and why. By abolishing the county tests, which are not benchmarked against state or national standards, Weast argues that more of the school year could be spent on actual teaching, and that focusing on state tests will yield clearer expectations of what to teach.</p> <p>Tracking began in earnest in Montgomery County in the 1980s, just as the demographics were beginning to shift and the county was becoming more diverse racially, ethnically and economically.</p> <p>"There's a misconception that ability grouping benefits students who are separated out in higher groups, and that's not necessarily the case," said Mark Simon, head of the county's teachers union. "The question is how teachers teach. And if you have small enough class sizes and you have training and support for teachers to teach heterogenous groups of students, then a heterogenously grouped class can be a much better learning environment for a wide range of kids."</p> <p>Poston acknowledges that putting an end to tracking will not be easy.</p> <p>"Some of the feedback we got from folks, they</p>		

Narrative	Analysis Categories	Code Line Count
<p>didn't think all kids needed to demonstrate success. They were interested in their small sector and didn't care about anyone else. That's cultural warfare," he said. "But there's a large number of kids who are underserved in Montgomery County, and the question is, how can our culture sustain allowing such a large group of kids to continue to fail in public school?"</p>		
<p>3:3) 30-OCT-2000 12:38 Wilhelmina Mazza (billiemscd)            Powerful article. Provides great arguments regarding high stakes testing and especially ability grouping. I have long felt that the weakest teachers were assigned to the weakest students - and found that to be repugnant!</p>	<p>Sharing experiences</p>	<p>11g-5</p>
<p>3:4) 30-OCT-2000 20:28 Dr. Carole E. Gould (grammie)            The bigger question may lie in the willingness of the 'talented' teacher of Algebra (or other areas of mathematics)to work with the lower achieving student.</p> <p>I have personally found my niche is with a specific level of student as I don't have that higher level of training. I know what is expected above my classes, but am capable of only going to a set level in teaching students. Am I, therefore, a lower ability teacher and should not be working with these lower students? (I do hold high expectations for the individual student.)</p>	<p>Sharing experiences</p>	<p>11g-12</p>
<p>3:5) 30-OCT-2000 20:38 Edward M. Curran (emc)            Re: How Tests Can Drop the Ball</p> <p>Good article. Makes a point that any high stakes test should always be taken with at least 2 grains of salt. Consider the high stakes testing involved with SATs. How many of our students allow themselves to be overwhelmed by the thought of a single test determining their entire future?</p>	<p>Student initiated discussion w/teacher</p>	<p>11h-14</p>

Narrative	Analysis Categories	Code Line Count
<p>At the minimum, high stakes tests should be retaken if a student falls outside(above or below) of the norm. Of course, you have to decide on the norm. Will you use a population norm, or will each student have an individualized norm based on a personal history?</p>		
<p>3:6) 30-OCT-2000 20:48 Wilhelmina Mazza (billiemscd)  I find Dr. Gould's response interesting. I wasn't thinking about secondary math teachers. I was more concerned with the grouping of students in grades 3-5. I have seen situations where the teacher of the lowest group was the weakest 'mathematics-wise' teachers in the grade level. I have observed students in the lowest group experience less of the planned course, while they are expected to take same test as the rest of the students in their grade. No wonder their grades are low! These students never have an opportunity to learn via interaction with peers who have a deeper understanding. By the time they take an algebra course they are, in my opinion, doomed to failure.</p>	Sharing experiences	11g-15
<p>3:7) 31-OCT-2000 01:08 Michael E Matthews (hamath)  Ah yes, but who are assigning the weakest teachers to the weakest students?  How many times do we see the math head teaching calculus or the higher math of the area?  How many math heads do you know that teach the "lower students"? How many first year teachers are "dumped with the 10th grade pre-algebra class?"  Those in charge have to look hard at themselves. (I've been at fault here too)</p>	Sharing experiences	11g-9
<p>3:8) 31-OCT-2000 05:53 Anita Savva (asavva)  One of things that I'm not too proud of is that I too have been on the end of the stick that tracks children. Being the only middle school math teacher at our small school. I alone made the decision to track children into either Algebra or PreAlgebra at eighth grade. It's</p>	Sharing experiences	11g-9

Narrative	Analysis Categories	Code Line Count
horrible decision to make. I made the decision that starting this year, all students would take Algebra. Why not give everyone a chance and MAKE IT WORK.		
3:9) 31-OCT-2000 12:05 Elizabeth Staudenmeier (erstauden) I agree with Michael Matthew's observation that the more experienced teachers are handed the calculus class and the first-year teachers are given pre-algebra. When considering the pre-algebra/algebra debate, we should look at both sides of the issue: who is being placed and by what criteria, and who is teaching the course. I believe that a pre-algebra class can be dynamic, exciting, and relevant to the students involved. But effectively teaching this course requires the resources and insight that more seasoned teachers can bring to it. High school math departments must make it a policy to involve all of their teachers in every level of instruction. Stagnation can occur no matter what you're teaching.	Sharing experiences	11g-15
3:10) 31-OCT-2000 14:27 Sister Terry Farrell (sisterterry) I am a department head who happens to teach the lower level geometry classes as well as A.P.Calculus. I firmly believe that the BEST teachers should teach lower ability students.	Sharing experiences	11g-4
3:11) 31-OCT-2000 16:16 Rick Norwood (rnorwood) Actually, I think the most patient teachers should teach the lower ability students.	Sharing experiences	11g-9
3:12) 31-OCT-2000 17:28 Paula Bendall (ratiga8.) As a New Yorker, I have to say that "those tests" shook our community--parents and teachers alike. It was a beginning to understanding reliability and, more importantly, validity of standardized tests.	Sharing experiences	11g-4
3:13) 31-OCT-2000 18:32 Roberta W Grenz (robin)	Sharing experiences	11g-10

Narrative	Analysis Categories	Code Line Count
<p>I think the most patient, but also those with high expectations, the experienced, the "well educated" (whatever that means), AND, especially, those who WANT to teach the lower level students should teach them. A new, inexperienced teacher with, perhaps, fewer degrees than someone else, who loves the challenge and believes all students can learn, may turn out to be one of the best teachers - for any student - of course, assuming support from his/her colleagues!</p>		
<p>3:14) 31-OCT-2000 20:38 Fred G. Harwood (fharwood)  I feel that every math teacher should teach a diverse load at some times in their careers. It is in the alternate courses (pre-algebra, modified, essential etc.) that desperation makes us better teachers. We'll experiment, take risks to find a working, relevant, transferable curriculum. It is in the enriched (advanced) classes that we take risks to find an open-ended, relevant curriculum because our 'failures' can be made up in acceleration. The rich themes, techniques and assessments that we create or utilize in these areas are then transferred into our 'regular' classes enriching their learning and hopefully teaching us to continually stretch ourselves. It is also in the two different levels that our assessment practises are the most challenging as they often assess neither the strengths or weaknesses adequately. As a veteran, I often have taken the most mixed bag of classes in our math/science department because we have a team approach. "Our" kids should be the school's kids.</p>	<p>Sharing experiences</p>	<p>11g-20</p>
<p>3:15) 31-OCT-2000 20:44 Edward M. Curran (emc)  Mike Matthews has a very valid point. But I do want to say that my predecessor as dept chair never took the AP class for himself. In fact, he even taught our "slowest" class. What he did, and what I intend to continue, was to allow teachers to make preferences known, but share the "wealth" of the honors and A.P. classes. (Of course, there are other issues of labeling or tracking to be dealt with.)</p>	<p>Sharing experiences</p>	<p>11g-10</p>

Narrative	Analysis Categories	Code Line Count
I firmly believe that the best teachers should teach the youngest or "weakest" classes.		
<p>3:16) 01-NOV-2000 11:31 Brooke Bertholet (brooke)</p> <p>I hold the position of Anita Savva. Every kid should be given the chance and it is up to me in my classroom to make it work. In an elementary classroom setting, there are always mixed abilities and I do want to convince the kids that math is for everyone. There are always those kids at the beginning of the year who come in with a "low" performance from previous years who say, simply, "I don't do math, so why bother at all?" Getting them to abandon that attitude is the hardest part, not the math itself. Through greater individualised instruction, and a variety of assesment techniques which help me know better what each child has learned helps them, in turn, shake their anxiety. Yet, I am often told that this is unfair to the individual student who will then face "real life" and be thrown back into the low level. How is there a way to mediate this situation? I would appreciate the thoughts of my colleagues here in the seminar on this matter. An answer to this might also eliminate the need to ask what teacher needs to be assigned what student. As long as the expectation is "high" for both the kids and I, where the assumption is that quality learning and teaching is for everyone, then levels of success on behalf of all would be more consistently greater.</p>	Sharing experiences	11g-26
<p>3:17) 01-NOV-2000 14:08 Kim Kelly (kkelly)</p> <p>I agree with fharwood. Math teachers should be teach all levels. Our lower ability students need the BEST teacher as well as our AP students. I have found that we tend to stagnate as educators by only teaching one level.</p>	Sharing experiences	11g-5
<p>3:18) 03-NOV-2000 16:57 Rick Norwood (rnorwood)</p> <p>Brooke Bertholet wrote: "There are always those kids at the beginning of the year who come in with a "low" performance from</p>	Sharing experiences	11g-18

Narrative	Analysis Categories	Code Line Count
<p>previous years who say, simply, "I don't do math, so why bother at all?" Getting them to abandon that attitude is the hardest part, not the math itself."</p> <p>I teach a college course for majors in K-8 education, and I often get students who say, "I hate math. Why should I have to learn math, when I'm only going to teach (say) kindergarden or second grade." But it is these math hating teachers who instill the bad attitude toward math that you have to work so hard to overcome. My own school is starting to require all would be teachers to learn some math, and it certainly is a step in the right direction. But it is hard for me when a very nice person who really loves children begs for a passing grade, but does not understand why <math>3 \times 2 = 2 \times 3</math>.</p>		
<p>3:19) 04-NOV-2000 15:42 Brooke Bertholet (brooke)</p> <p>I have been pondering Rick's response to my question/comments. Thanks, for the insight. Yet, I lean to believe that Rick's insight might only be applicable to very specific circumstances or locations. For my part, every colleague I've ever worked with has always delivered the utmost best for their students regardless of the elementary subject matter. I try my constant best to do the same. I worry, a bit, that categorizing teachers, whether in training or not, reinforces a public perception which, at times, undervalues the profession while expecting the most from its practioners.</p> <p>The mediation I am looking for a solution to in my question may not be realistic. I'm not sure. Thats why I asked. I try to reach one of my own in my classroom for the kids, but a full "objective" appraisal standard hasn't appeared for me to assist the mathematical learning and reasoning development of all of my students. NCTM developed materials help a lot. Yet, a local educational environment may expect something else. Each student is a fine thinker and can do the required arithmetic, at whatever level, explaining themselves as they go along, but each in their own way, which, I, as their teacher, must take into consideration. If I just</p>	Sharing experiences	11g-41

Narrative	Analysis Categories	Code Line Count
<p>gave them a standardized test, without room for them to explain to me what they have done and why, even the "top" student will not score perfectly.</p> <p>The question of attitude, which is so often difficult to overcome, more than setting the right classroom conditions for the discovery of the joy of mathematical thinking, may have more to do with the remaining strands, in general, of education in the west which have still to modify themselves to face the very new, and ever changing, challenges which await us in this new century.</p> <p>I'm grateful that Rick's response has made me think about this matter even more closely. This kind of interaction is what has brought me here, as a teacher, to begin with. Thanks. Any further thoughts on this topic would be greatly appreciated as well.</p>		
<p>3:20) 04-NOV-2000 16:38 Rick Norwood (rnrwood)  Brooke, you raise what may be our biggest problem. We do not want to badmouth our profession. But we do want to raise standards. One of the activities I have my students do is to talk about their worst and best K-12 math experiences, and most of them have had at least one really bad teacher. In several cases, it was the coach who had no interest in teaching math and made no effort to do so. In several cases it was the "burned out" teacher, who was just marking the days to retirement and told the students to do whatever they pleased and not bother him. In several cases it was the man who understood math, but didn't know how to teach. In other cases, it was the man who didn't understand the math, and told the students not to ask questions, because he didn't know the answers.</p> <p>To the outside world, we may have to cover up characters like these. But among ourselves, we need to do something about them, because they make all of our jobs much more difficult.</p>	Sharing experiences	11g-20
3:21) 07-NOV-2000 01:07 Christine Palmer		

Narrative	Analysis Categories	Code Line Count
<p>(cmpalmer)  Rick, Speaking of students who do not know why <math>2+3 = 3+2</math>, when we discuss the attitudes of the students, I think there is another area of concern, one that you alluded to above: the students who are able to adequately "manipulate the numbers", and therefore think they know the math. They have the attitude that they have nothing further to learn, because they can successfully get the right answers most of the time. Closely akin to that are the secondary teachers who believe that the "creme de la creme students" do not need to be able to model the math...they "intuitively understand it", and the "modeling is a waste of time for them". It has been my experience that if a student (top, or otherwise) cannot explain or diagram or model the mathematics, they don't REALLY understand it. I insist on working at both levels: being able to do AND being able to understand, and demonstrate their understanding of, how and why. What might your comments be re: concrete vs abstract, or applied vs theoretical, mathematics...especially for the bright student?</p>	Sharing experiences	11g-22
<p>3:22) 07-NOV-2000 13:14 Rick Norwood (rnrwood)  I think every student, especially the bright student, should be able to give a concrete example of every abstract concept, and a concrete example of something to which the abstract concept does not apply. And, conversely, should be able to give an abstraction of every concrete computation, and an abstraction that looks like it might work, but doesn't. In fact, in a good math class, this is how we progress from subject to subject, by playing off the abstract and the concrete. "What would happen if we did this?" should be the question on every student's lips.</p>	Sharing experiences	11g-12
<p>3:23) 07-NOV-2000 22:46 David Eric Swanson (swanson)  Two things come to my mind with regards to bright students. I let them teach some things to my class, particularly if they have a different insight I had not considered before. Bright students also can become teachers in</p>	Sharing experiences	11g-11

Narrative	Analysis Categories	Code Line Count
cooperative groups. We seem to learn best the things best we teach to others. If we can turn our classroom into a community of learners, we also find that every student has a talent at something which can enrich the group. All students have strengths we can build on and areas we can work to improve.		

**Sharing experiences**

**11c-307**

**Sharing experiences**

**11g-267**

**Student initiated discussion w/teacher**

**11h-14**

**Teacher initiated discussion w/student**

**11d-2**

**Poolside Café, Item 1**

**Table # 120: Poolside Café, Item 4, Question of the Day**

Narrative	Analysis Categories	Code Line Count
<p>PBS MW Question of Day Poolside Cafe Item 4</p> <p>Item 4 29-OCT-2000 17:06 Susan Doherty (squinnxx) Follow this link to answer the question of the day: Survey</p>		
<p>4:1) 31-OCT-2000 18:24 Susan Doherty (squinnxx) What question would you ask of your fellow educators?</p>	Teacher initiated discussion w/student	11d-2
<p>4:2) 31-OCT-2000 22:35 Christine Palmer (cmpalmer) At what grade level do you think we should begin to group our students for their math instruction? Or should we? Do you think that we should be using math certified math teachers at the elementary level? If so, starting at what grade?</p>	Sharing experiences	11g-5
<p>4:3) 01-NOV-2000 10:05 Barbara Middleton (bjmiddle) Christine, I really think students work better when they are grouped heterogeneously. I put students into groups of four. Within that group, there should be a top student, poor student and two average students. It is amazing to watch the interaction. Should there be teachers certified in math at the elementary level? I think there should be a math resource person (facilitator) available to assist the other teachers through inservices, demonstration lessons, observations and resource material starting in kindergarten.</p>	Sharing experiences	11g-11
<p>4:4) 01-NOV-2000 11:26 Wilhelmina "Billie" Mazza (billiemscd) I agree with Barbara's response to Christine's question. I am a resource person - but recognize it is impossible to help teachers who do not want to be helped! For them there is no reason to change! My question for the group is,</p>	Sharing experiences	11g-9

Narrative	Analysis Categories	Code Line Count
<p>"What ideas do you have about reaching these people?" I have offered inservices and meet regularly with teachers who are willing to expand their horizon. Any and all ideas area welcome!</p>		
<p>4:6) 01-NOV-2000 11:55 Brooke Bertholet (brooke) I too, like Christine, "group" my students heterogeneously. Indeed, the interaction and effect is marvelous to watch. I am a certified elementary teacher who would like to hold a full endorsement in math. I love the subject, and hope through my interest the kids, in turn, become more interested. Yet, professional growth, as well as student growth, is a two-way process. The latter between the student and teacher, and the former between the teacher and the administration. All should be encourgaged to be active, and valued, participants in the educational process.</p>	Sharing experiences	11g-12
<p>4:7) 01-NOV-2000 12:43 Kristina Lasher (kristina) I think it's helpful to have a math certified specialist in an elementary school, but I don't think that requiring math certification for elementary teachers will necessarily improve math education at this level. I've recently read Liping Ma's book, Knowing and Teaching Elementary Mathematics. (I highly recommend it!) She points out that it's not that US elementary teachers haven't had enough math classes. Rather, they have not gained a deep understanding of the arithmetic algorithms they memorized as children. This is what causes them to have difficulty teaching some math concepts to students. Taking college level math classes (which are required for math certification) won't help elementary teachers explain why you take one away in the ten's column and put a little one next to the number in the ones column before subtracting. Professional development and opportunities to talk with colleagues are more likely to help them.</p>	Sharing experiences	11g-19
<p>4:8) 01-NOV-2000 15:46 Edward M. Curran</p>		

Narrative	Analysis Categories	Code Line Count
<p>(emc) I was struck by the relationship between grouping students and dealing with teachers who resist help or change. Perhaps we can group our teachers. Match rookie with veteran, style X with style Y, different energy levels, leaders with followers, etc. Do this during in-service professional development and during school year. Set up teams, vertically and/or horizontally.</p>	Sharing experiences	11g-8
<p>4:9) 03-NOV-2000 16:24 Barbara Middleton (bjmiddle) "Billie" the main thing I use to persuade educators to change is my own enthusiasm (I'm sure you do too). I really get excited about the way math is being presented because I was an elementary school student who never understood what was going on. Between the "gizzintas", "cross out the", "flip the second fraction and multiply", etc., etc., it is no wonder I didn't get it. Guess what? Now I get it. One thought to assist in changing some teacher's thoughts would be to do an inservice where you present a math concept and "talk at them". Give them a worksheet to do. On another occasion present a concept with manipulatives, cooperative learning and an interactive style. That might help to get them enlightened. My own feeling is that there is a great fear out there. It is understandable. The teachers piloting the Everyday Math program in the school are telling me they finally understand what math is about from presenting it to the students. In our district we must change. Due to court order, we must do a whole school reform. This year the reading program was put into place and next year the math program will be added. This is a benefit to me since there is no choice in change....it is just which change do we want.</p>	Sharing experiences	11g-25
<p>4:10) 04-NOV-2000 01:21 Anna Maria Licameli (alicameli) Students know when they are being heterogeneously grouped. They know who is the "top" kid in the group, and the "bottom" kid sure knows he/she is the "bottom." I find that this gets them stuck in ruts about the way they</p>	Sharing experiences	11g-20

Narrative	Analysis Categories	Code Line Count
<p>see themselves. My solution is to group randomly. I keep a set of cards in my desk with each kid's name on a card, and whenever I need to make groups, I pull out the cards, shuffle them, and deal out piles of three or four. Then I read the names. This gives students the opportunity to work in all sorts of combinations with all sorts of different people. They don't have to guess my motivations for putting certain people together or keeping others separate. There is no worry on my part about balancing numbers of boys and girls in groups--whatever the cards say, we accept. If students complain that they were in the same group with a certain person several times in a row, then we can make it a lesson in probability!</p>		
<p>4:11) 04-NOV-2000 05:40 Brooke Bertholet (brooke) Thanks for the insight, Ana Maria! I hadn't thought about that before, i.e: the heterogeneous grouping. The kids and I will certainly use your suggestion in our next group activity. Just great that part, about the lesson in probability.</p>	Sharing experiences	11g-5
<p>4:12) 04-NOV-2000 21:33 Jeanne Shimizu (jeanne) Like Anna Maria, I use a random draw of cards to determine my groups. I used to spend a great deal of time setting up heterogeneous ability groups that took into account gender and behavior. There were several reasons besides the time factor that caused me to switch. But rather than focus on those reasons, I want to bring up another factor that is critical to the success of using groups. When I stopped using "intentional heterogenous" groupings, I was able to spend more time on designing activities, and posing questions that were more interesting to my students (and me). The tasks that were the most successful were ones that had multiple approaches so that the groups could decide their own path to a solution or were "big" enough so that collaboration was necessary for completion.</p>	Sharing experiences	11g-17

Narrative	Analysis Categories	Code Line Count
<p>4:13) 07-NOV-2000 01:27 Christine Palmer (cmpalmer)</p> <p>Like Jeanne Shimizu, I think that we ought to be spending more time designing activities, and posing questions that are interesting to the students. I have found that if I can create problems from my life experiences, especially if they entail something that is familiar to my students, they are far more willing to work at them, and the math makes a bigger impact on them. For example, I create problems about week-end trips that we take, and about purchasing experiences (especially those in which my mathematical knowledge saved me money). Here's another example: last year, I created a proportion problem from a TV show on which a family's septuplets celebrated their 4th birthdays playing with pink &amp; blue balloons. The familiarity of some of the students, with the TV show that they had watched the night before, made an immediate difference in their interest level; and their excitement and interest carried over to those students who had not seen the show. For the statistics unit, we did a comparison of housing costs among the different areas of our school district, using the deed transfer information from the local newspaper. This was far more fascinating to them than comparing a set of numbers that has no personal meaning. Problem is, we need more "free time" in order to create such experiences. We also need more open-ended opportunity to discuss what we do with our colleagues. I have read that more such time is provided to our colleagues in foreign countries, and I wonder what difference that makes in terms of assessment results.</p>	<p>Sharing experiences</p>	<p>11g-32</p>
<p>4:14) 07-NOV-2000 10:09 Fred G. Harwood (fharwood)</p> <p>I also like to have students trying to make 'discoveries'. There is a powerful motivational urge to be known. I continually display previous student discoveries with their names on them to my current students to get them desiring their own fame. It also teaches that mathematics is dynamic.</p> <p>The activity I posted in the Main House, Item 4:22ish has led to 4 wonderful student</p>	<p>Sharing experiences</p>	<p>11g-16</p>

Narrative	Analysis Categories	Code Line Count
<p>discoveries. Har-D-R Multiplying, De Winter Wonder, the ROYal Gorithm and Mod Mayhem. When utilizing the science of patterns, there are still wonderful opportunities for students to make connections and extensions. This then motivates them to continue seeking the connections with interest. One Gr. 10 C+ student went on to an A in Honours Math 12 after his "Wong Way" discovery.</p>		

**Sharing experiences**  
**Teacher initiated discussion w/student**

**11g-179**  
**11d-2**

**Poolside Café, Item 1**

**Table # 121: Poolside Café, Item 5, Recommended Article**

Narrative	Analysis Categories	Code Line Count
<p>PBS MW Rec Artic Poolside Cafe Item 5</p> <p>Mathweb 2000 Center, Poolside Cafe , Item 5 Recommended Article</p>		
<p>Item 5 30-OCT-2000 13:29 Susan Doherty (squinnxx)</p> <p>Mari Muri, presenting in Panel 1, recommends this article. The complete article is available here: Article</p> <p>The Myth of the Texas Miracle in Education By Walt Haney / Boston College</p> <p><b>ABSTRACT</b> I summarize the recent history of education reform and statewide testing in Texas, which led to introduction of the Texas Assessment of Academic Skills (TAAS) in 1990-91. A variety of evidence in the late 1990s led a number of observers to conclude that the state of Texas had made near miraculous progress in reducing dropouts and increasing achievement. The passing scores on TAAS tests were arbitrary and discriminatory. Analyses comparing TAAS reading, writing and math scores with one another and with relevant high school grades raise doubts about the reliability and validity of TAAS scores. I discuss problems of missing students and other mirages in Texas enrollment statistics that profoundly affect both reported dropout statistics and test scores. Only 50% of minority students in Texas have been progressing from grade 9 to high school graduation since the initiation of the TAAS testing program. Since about 1982, the rates at which Black and Hispanic students are required to repeat grade 9 have climbed steadily, such that by the late 1990s, nearly 30% of Black and Hispanic students were "failing" grade 9. Cumulative rates of grade retention in Texas are almost twice as high for Black and Hispanic students as for White students. Some portion of the gains in grade 10 TAAS pass rates are illusory. The numbers of students taking the grade 10 tests who were classified as "in special education" and hence not counted in schools'</p>	<p>Sharing experiences</p>	<p>11c-67</p>

Narrative	Analysis Categories	Code Line Count
<p>accountability ratings nearly doubled between 1994 and 1998. A substantial portion of the apparent increases in TAAS pass rates in the 1990s are due to such exclusions. In the opinion of educators in Texas, schools are devoting a huge amount of time and energy preparing students specifically for TAAS, and emphasis on TAAS is hurting more than helping teaching and learning in Texas schools, particularly with at-risk students, and TAAS contributes to retention in grade and dropping out. Five different sources of evidence about rates of high school completion in Texas are compared and contrasted. The review of GED statistics indicated that there was a sharp upturn in numbers of young people taking the GED tests in Texas in the mid-1990s to avoid TAAS. A convergence of evidence indicates that during the 1990s, slightly less than 70% of students in Texas actually graduated from high school. Between 1994 and 1997, TAAS results showed a 20% increase in the percentage of students passing all three exit level TAAS tests (reading, writing and math), but TASP (a college readiness test) results showed a sharp decrease (from 65.2% to 43.3%) in the percentage of students passing all three parts (reading, math, and writing). As measured by performance on the SAT, the academic learning of secondary school students in Texas has not improved since the early 1990s, compared with SAT takers nationally. SAT-Math scores have deteriorated relative to students nationally. The gains on NAEP for Texas fail to confirm the dramatic gains apparent on TAAS. The gains on TAAS and the unbelievable decreases in dropouts during the 1990s are more illusory than real. The Texas "miracle" is more hat than cattle.</p> <p>About the Author  Walt Haney, Center for the Study of Testing, Evaluation and Educational Policy, Campion Hall 323 Lynch School of Education, Boston College, Chestnut Hill, MA 02467; Phone: 617-552-4199; Fax: 617-552-8419; E-mail: haney@bc.edu; Home page: <a href="http://www2.bc.edu/~haney/">http://www2.bc.edu/~haney/</a></p> <p>Walt Haney, Ed.D., Professor of Education at</p>		

Narrative	Analysis Categories	Code Line Count
<p>Boston College and Senior Research Associate in the Center for the Study of Testing Evaluation and Educational Policy (CSTEED), specializes in educational evaluation and assessment and educational technology. He has published widely on testing and assessment issues in scholarly journals such as the Harvard Educational Review, Review of Educational Research, and Review of Research in Education and in wide-audience periodicals such as Educational Leadership, Phi Delta Kappan, the Chronicle of Higher Education and the "Washington Post."</p> <p>He has served on the editorial boards of Educational Measurement: Issues and Practice and the American Journal of Education and on the National Advisory Committee of the ERIC Clearinghouse on Assessment and Evaluation.</p>		
<p>5:1) 30-OCT-2000 20:36 Dr. Carole E. Gould (grammie) Having been a TX teacher, I find a lot of truth in this review of the 'state test phenomenon'. We spent a lot of time "teaching to the test". I am not sure that it was ever correlated with national norms.</p> <p>Currently I am in TN and now face a similar upheaval of this state's testing system. TN is replacing the state test (TCAP) with Gateway Tests in Algebra I, English II, and Biology with seven more areas to follow. A student MUST pass all of these Gateway Tests to graduate.</p>	Sharing experiences	11g-10
<p>5:2) 31-OCT-2000 13:27 Craig Morgan (cmorgan) Another Bush illusion. Sorry about the politics, but somewhere distinctions need to be shown in the mis-education of our children using these standardized tests. Is this how we want the whole country to go for the next four or eight years?</p> <p>What should be the role of these tests? Or at least the role of &lt;valid&gt; tests in determining graduation? Should there be tests at all or performance?</p>	Social discussions	11f-8

Narrative	Analysis Categories	Code Line Count
<p>5:3) 31-OCT-2000 16:19 Rick Norwood (rnorwood)            Since the subject of politics has been broached, am I the only one who is scared half to death of the voucher system? Rick Norwood</p>	Social discussion	11f-3
<p>5:4) 01-NOV-2000 11:30 Wilhelmina "Billie" Mazza (billiemscd)            In response to Rick - NO! It will only add further difficulty to a public school system. Until we find ways of implementing the NCTM Equity Principle with ALL STUDENTS we are in trouble!</p>	Social discussion	11f-4
<p>5:5) 01-NOV-2000 22:31 Nora Werme (nwerme)            Rick, The voucher system brings to mind the image of rats deserting a sinking ship. This is no way to repair a "ship" that is broken!</p>	Social discussion	11f-3
<p>5:6) 03-NOV-2000 16:49 Rick Norwood (rnorwood)            If Bush is elected, and pushes through a voucher system, the money for the vouchers will come right off the top of the state school budget, which means that the public schools will instantly have to lay off a percentage of their teachers, probably the teachers most recently hired. Of course, there will be jobs for those teachers in the parochial schools that get the vouchers, but those jobs have much lower pay and benefits.</p>	Social discussion	11f-9
<p>5:7) 06-NOV-2000 08:27 Denise Tuck (dtuck)            I would have preferred to focus this conference on Math issues and not political issues. We, as dedicated math teachers, can change how we teach and what is taught if we study current non-politically motivated research and work together to make the needed changes in our profession. Although we can't avoid the political battles swirling around us, we should be the ones talking about getting accurate assessment data and then using it to drive instruction and ensure that all students reach their full potential.</p>	Social discussion	11f-24

Narrative	Analysis Categories	Code Line Count
<p>Perhaps the authors of this study have lost sight of the fact that a careful look at assessment data SHOULD be used to change our instructional patterns, what may people refer to as "teaching to the test." If we are testing the right things, then teaching those same concepts and skills is exactly what we should be doing. Performance based testing that relies on higher-order thinking skills cannot be taught in the same way as the older skill and drill test questions. If teachers are focusing on these higher-order skills, our students will benefit. The fact that high-stakes assessment forced this change is not important to the final outcome.</p>		
<p>5:8) 06-NOV-2000 12:48 Rick Norwood (rnorwood)  There was an interesting feature on NPR last night about assessing the effects of assessment.</p> <p>According to the feature, there have been a number of studies of what happens when students are forced to repeat third grade if they do not pass a standard test after three tries. Apparently the effects of holding students back are not good. And yet, I'm not sure what the alternatives would be. To send a student on who cannot read, say, hurts both the student and the whole class that student is in. Maybe intensive summer school is the answer, with classes that focus just on the basics: reading, writing, and arithmetic.</p>	Sharing experiences	11g-13
<p>5:9) 06-NOV-2000 19:39 Fred G. Harwood (fharwood)  To what extent can we have students repeating units of our course and not the course itself? I had an A/B student in Gr. 8 who didn't get equations, so I asked her to come in during two lunch hours where she mastered the unit and overcame the understanding gap that would have expanded exponentially during her later schooling. I'm pleased to say we went through a similar process when I had her 3 years later in Gr. 8 and she went from a C to an A through the year. Now if the student is unmotivated,</p>	Sharing experiences	11g-23

Narrative	Analysis Categories	Code Line Count
<p>then I recognize the problems inherent. In our school several teachers have initiatives to try to fill in the incomplete ideas with the kids before they become compounded.</p> <p>In our province, the government has recognized the need for earlier intervention and budgeted monies to decrease the PTR for primary grades to improve literacy, numeracy through smaller class sizes and to thus benefit later teachers with an improved foundation for each child. This has only been in effect for two years now and my support is for it based on the research and reasoning of this argument.</p>		
<p>5:10) 21-NOV-2000 15:07 Susan Doherty (squinnxx) From the Washington Post November 21, 2000</p> <p>Individualized Testing Puts Pupils on Track</p> <p>Marquis Morgan, a slim, energetic 8-year-old, read the passage on fish and whales as if he knew it by heart. "Most mother fish lay eggs," he read as the teacher sitting at Marquis's desk rapidly marked a form. "The babies are born when the eggs hatch."</p> <p>His consonants and vowels were clear and correct. His rhythm was smooth. He seemed to be performing well for a third-grader.</p> <p>But the teacher at Montgomery County's Georgian Forest Elementary School probed deeper. She asked Marquis to look at her and retell what he had just read. She asked him more questions and discovered he had few answers. Even though he had read that fish lay eggs, he could not explain why mother fish, unlike mother whales, might not know their babies.</p> <p>Educators say many schools would have assumed that a smooth reader like Marquis was doing fine and would not have discovered his lack of comprehension until weeks or months later, when catching up would be more difficult.</p> <p>But Georgian Forest is at the forefront of a</p>	<p>Sharing experiences</p>	<p>11c-177</p>

Narrative	Analysis Categories	Code Line Count
<p>small but growing movement to make frequent and detailed assessments part of every child's schooling. Because Kristen Diaz, Marquis's reading support teacher at the Silver Spring school, quickly found the gap between his reading and his comprehension, she could help him right away.</p> <p>A decade ago, such careful assessments of individual students were usually done only by special education teachers and reading specialists working with children lagging behind. Today, educators are convinced that these precise methods can have a significant impact on the progress of all children, particularly if used frequently in the lower grades.</p> <p>"It is a real opportunity for assessment to become much more useful to teachers and students and parents," said Peter Afflerbach, director of the Reading Center at the University of Maryland's College of Education.</p> <p>Short, detailed checks of progress tied closely to instruction are very different from the state-mandated annual tests, such as the Maryland School Performance Assessment Program or Virginia's Standards of Learning tests, which are used to rate schools or determine student promotion.</p> <p>State officials say those annual tests also can be used to help teachers identify individual student weaknesses. But educators complain that the information reaches them months after the test has been given, whereas their own quick checks give them data they can use instantly.</p> <p>Montgomery officials launched a system of regular assessment in reading and math at Georgian Forest and a few other schools four years ago, expanding it to all 125 elementary schools last year. The program uses methods similar to those used by the international program Reading Recovery.</p> <p>The national organization that has been most successful in popularizing frequent assessment and altered instruction for every child is the</p>		

Narrative	Analysis Categories	Code Line Count
<p>Towson, Md.-based Success For All Foundation. Its detailed and strictly paced system is used in 1,800 schools. Every eight weeks, each child in the lower grades of a Success For All school takes a 20-minute oral test. The small reading classes are then shuffled so that children who have improved can move to more challenging classes and those in trouble have more time to learn.</p> <p>The Success For All Foundation has also designed programs in math and other subjects that use frequent diagnostic assessment. At Georgian Forest and other Montgomery schools, similar efforts are made to monitor student progress in all subject areas.</p> <p>Georgian Forest Principal Chrisandra Richardson and her staff, including Diaz, reading specialist Karla Walker and Title I teacher specialist Eunice Gerring, use two tests to track progress in reading in the early grades. Three times a year, they give the Early Childhood Assessment Program test, developed by the county to determine skill level in several aspects of literacy.</p> <p>Which students understand what a comma is for? Which know that short vowels often precede double consonants? Even kindergartners are asked to write their names, with the teachers making notes on each effort. One teacher recorded that a 5-year-old named Brittany "wrote Britt without looking" before she turned to check the rest of the letters on a sign at her desk.</p> <p>Teachers then put the children in different reading groups, based on their proficiency in a particular area. One girl, for example, might be placed in a group of students who are good at decoding words yet also grouped with students who are weak on comprehension.</p> <p>Then it gets even more complicated. The school uses a second test called "the running record," a way of breaking down each sentence a child reads into hits and misses.</p> <p>If Marquis Morgan had misread the fish passage and said, "Most mother figs lay eggs,"</p>		

Narrative	Analysis Categories	Code Line Count
<p>the teacher would have recorded the sentence this way: {check} {check} figs/fish {check} {check}. Every wrong word is written down, and a check mark means a correct word. A minus sign means a word has been omitted. "SC," for self-correction, means the child recognized a mistake and went back to correct it.</p> <p>If a child is learning quickly and well, a running record is done no more than twice a month. A child who is struggling may have a running record every day. Error rates, self-correction rates and other statistics are totaled and analyzed. Children with similar problems are put in groups of three or four for special attention.</p> <p>Afflerbach said school superintendents would like to impose such precise calculations on every classroom, "but it takes a really good level of teacher expertise to be able to do that accurately."</p> <p>Most college students in elementary education programs do not receive such training. Next fall, the University of Maryland will become one of the first schools in the country to require that all undergraduate education majors take a course in reading assessment, Afflerbach said.</p> <p>The other issue is staffing. Maintaining small reading groups and testing students individually require extra teachers. Montgomery County added staff to all first and second grades with the goal of having no more than 17 pupils per teacher, and some schools with more disadvantaged children are receiving even more staff.</p> <p>Richardson, the principal at Georgian Forest, said some teachers, particularly at the kindergarten level, needed help in using the data from the Early Childhood Assessment Program test and from the running records tests. "It has been a struggle for some teachers to understand that the data-gathering has a real purpose," she said. "It is not just getting the data and putting it into a drawer."</p> <p>The growing frequency of tests can be daunting for parents. "I think there is so much</p>		

Narrative	Analysis Categories	Code Line Count
<p>testing that it gets confusing for parents as to sorting out what they are doing and for what purpose," said Amy Bernstein, whose daughter, Sarah Goldenberg, is a third-grader at Georgian Forest.</p> <p>Bernstein said she is happy with Sarah's rapid progress in reading, however, and likes the high-level reading program, developed by the College of William and Mary, that tests say is right for Sarah.</p> <p>Armed with her precise information on Marquis's struggle with reading comprehension, Diaz is meeting with him and two other boys for 40 minutes every day. Together, they attack each new story, first trying to predict its subject by looking at the pictures, then reading it, then going over hard parts that each boy has marked with yellow Post-it notes.</p> <p>To deepen their ability to understand what they have read, Diaz starts a discussion of the story and how it connects with each student's life. "It's like Oprah's Book Club," said Richardson. Diaz waved grandly and said, "And I am Oprah."</p> <p>Back home, Marquis's mother, Donita Morgan, said he has become consumed lately with an urge to retell and analyze whatever he has seen. "He will see a movie or read a book, and then he wants to sit down and write about it," she said. "He is understanding a lot more and is trying to read bigger books."</p> <p>Such changes, his teachers say, are the result of their knowing exactly what he needs to learn and how that changes over time. It is, Gerring said, "an intimate look at children," and the only way to plan the most appropriate instruction.</p>		

**Sharing experiences**  
**Sharing experiences**  
**Student Social discussion**

**11c-244**  
**11g-56**  
**11f-51**

**Poolside Café, Item 1**

**Table # 122: Poolside Café, Item 6, What's on your mind?**

Narrative	Analysis Categories	Code Line Count
<p>PBS MW What's on mind Poolside Cafe Item 6</p> <p>What's on your mind?</p> <p>Item 6 30-OCT-2000 15:48 Susan Doherty (squinnxx)</p> <p>This is an open space for you to discuss any topic. This is a great opportunity to get feedback from other teachers!</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-3</p>
<p>6:1) 30-OCT-2000 19:07 Jeanine Brizendine (eteacher)</p> <p>Anyone have any ideas or thoughts on effective inventory assessments for basic facts?</p>	<p>Sharing experiences</p>	<p>11g-3</p>
<p>6:2) 30-OCT-2000 20:08 Deb Burdick (dburdick)</p> <p>This is directed to Susan. Hello From Alaska - Really Enjoying MathWeb 2000! It would be great to have a place to post our favorite Educational Quotes.</p> <p>Here is one of my favorites: The Definition of Learning is "Knowledge Construction" I always think of this when I am designing my lessons - if I really want students to "learn" something I have to give them opportunities to construct the knowledge in a way that is meaningful to them.</p>	<p>Sharing experiences</p>	<p>11g-11</p>
<p>6:3) 30-OCT-2000 20:28 Wilhelmina Mazza (billiemscd)</p> <p>Anyone have thoughts on what inspires experienced teachers to shift to a constructivist view of teaching and learning? Do you know teachers who have made this shift?</p>	<p>Sharing experiences</p>	<p>11g-4</p>
<p>6:4) 30-OCT-2000 20:40 Dr. Carole E. Gould (grammie)</p> <p>Deb, I like your statement. I wish I always thought about connecting each and every new concept to all students' past learning. It's such a building maze to create an environment</p>	<p>Sharing experiences</p>	<p>11g-10</p>

Narrative	Analysis Categories	Code Line Count
<p>where all students can connect the ideas to their own experiences so they can 'learn' (whatever that means) the new ideas. Then how do we test that they really "have" the ideas and are not merely feeding back our presentation?</p>		
<p>6:5) 31-OCT-2000 01:12 Michael E Matthews (hamath) I have thought of switching to constructivist view. I read a book by Wadworth on Piaget. He was a math teacher and really hit it hard on the nail. I have even made some changes already and had some success with the changes based on constructivism.</p>	Sharing experiences	11g-6
<p>6:6) 31-OCT-2000 13:32 Craig Morgan (cmorgan) I loved the statement on Learning is Knowledge Construction. The latest NCTM PSSM's really push that idea. Adopt a philosophy like the standards and you must change. That's more of a problem that adopting a philosophy because most teachers think they are already doing what the standards ask.  Change is a huge problem. Read Who Moved My Cheese! by Spencer Johnson to start addressing that problem.</p>	Sharing experiences	11g-11
<p>6:7) 31-OCT-2000 14:01 Susan Doherty (squinnxx) Thanks for the suggestion, Craig! I'll add it to the bookstore.</p>	Teacher initiated discussion w/student	11d-2
<p>6:8) 31-OCT-2000 17:28 Barbara Middleton (bjmiddle) I am an experienced teacher who has switched to a constructivist view. Why? Because the old "kill and drill" will never work with today's students. They are used to being entertained in a fast paced world. Do you like to sit and get talked at? Me neither. Neither do they. Let's all get them involved. Let them discover and create. When they ask me why I won't give them answers, I simply tell them, "If I give you</p>	Sharing experiences	11g-17

Narrative	Analysis Categories	Code Line Count
<p>the answer, it is just a borrow, it is still mine. If you discover the answer, you have ownership...it is yours." The most difficult thing about becoming a constructivist teacher is learning to keep quiet while the students try to obtain the correct answer. Be patient!!! They WILL find the answer. Thank-you Piaget and Bruner for all your good work!!!</p>		
<p>6:9) 31-OCT-2000 17:42 Paula Bendall (ratiga8.) To Jeanine Brizendine question about basic facts, I recommend the summer edition of the Perspectives, published by the International Dyslexia Assc. It's devoted to math, and one article in particular puts the issue of memory at the same seat in the brain as the phonemic and semantic memory systems that support decoding and comprehension.</p>	Sharing experiences	11g-8
<p>6:10) 31-OCT-2000 22:42 Christine Palmer (cmpalmer) Speaking of educational quotes, here is one I just heard: "Knowledge is the ability to take something apart and understand how it works. Wisdom is the ability to put it back together again, so that it still works."</p>	Sharing experiences	11g-5
<p>6:11) 01-NOV-2000 03:29 Lana McDonald (lanad) I agree with Barbara, but what I have found out is that even if you have embraced the constructivist view fully, because you appreciate the benefits to students, it is difficult to implement in a culture, with strong traditions that work for the teacher. When the management structure is based on power as control, it makes it even more difficult to implement the change that is needed. To compound the problem, when students are heavily dependent on the teacher, in that they seek teacher's approval for their every action, then it is easier said than done.</p>	Sharing experiences	11g-13
<p>6:12) 01-NOV-2000 10:00 Barbara Middleton (bjmiddle) Lana, you have some excellent points.</p>	Sharing experiences	11g-35

Narrative	Analysis Categories	Code Line Count
<p>Yesterday I taught a class that involved generations. Students collected data on the birthdates of themselves, their parents and their grandparents. In cooperative groups, they had to put this information in order from youngest to oldest in each group. I then recorded the data about themselves on the board. The objective was to discover the median. After much discussion it was determined that the oldest would not be in the middle, nor the youngest. We then crossed out from each end of the data until we arrived at the middle birth date. A parent was watching this and asked me where the math was? This was a second grade class. My point--the real problem is not only the teachers, but more so administration and the parents. Some teachers like the power associated with the position and becoming a facilitator puts more power onto the students. It is true that students do want the approval of the teacher, but they also want the approval of their peers. Through cooperative learning their success recognition can come from both sources--peers and teacher. We are so used to dispensing information. It is always hard to change, especially such a drastic one as this. Once the change takes place, the rewards are outstanding. If you are a traditional teacher, please just take the time once to ask a student how they arrived at a given answer and get ready for a big surprise. When you hear their thinking processes without algorithms, it is like a breath of fresh air. I am in my late fifties, and I am still excited when I work with my students.</p>		
<p>6:13) 01-NOV-2000 10:16 Craig Morgan (cmorgan)  Are you interested in seeing why we have to move to a different type of teaching, learning, and assessing, go to this site:  <a href="http://www.ianjukes.com/jukes%20info/presentations.html">http://www.ianjukes.com/jukes%20info/presentations.html</a>  Ian Jukes is a futurest and will move your vision of what schools are, where they are going, and what they need to be like.</p>	Sharing experiences	11g-8
<p>6:14) 01-NOV-2000 11:24 Carole Bilyk (cbilyk) Barbara:</p>		

Narrative	Analysis Categories	Code Line Count
<p>I like your quote about giving the answer vs. discovering the answer. Many teachers in Manitoba ask me what to say when parents complain that the teachers aren't "teaching" (what they really mean is that the teachers don't automatically give the answers). I will probably use your quote as I talk to teachers.</p> <p>I agree with the comments made about the difficulties in changing our teaching styles. Maybe this conference will help bring people together for mutual support.</p>	Sharing experiences	11g-11
<p>6:15) 01-NOV-2000 12:17 Brooke Bertholet (brooke) I am very appreciative of all the wonderful postings here.</p> <p>For me, whose teacher training is primarily founded on the techniques of Matthew Lipman &amp; Philosophy for Children, setting the conditions for the construction of meaning rests with my students ability to investigate a mathematical issue through open dialogue. I realise that all children do not readily possess the same ability to express their ideas verbally, especially mathematical ones. Yet, as confidence in a safe environment grows, where all ideas are treated with respect, the kids "discover" more math and continuously maintain an appreciation for what they have "learned" because it belongs exclusively to them alone and not to the adult in the classroom. Thanks to NCTM principles and standards, the kids and I find this even more enjoyable to achieve together.</p>	Sharing experiences	11g-20
<p>6:16) 01-NOV-2000 16:55 Fred G. Harwood (fharwood) I was very lucky to have backed myself into a situation relatively early in my career that taught me a most powerful lesson in constructivism and now I won't go back! In keeping with other 'streams', it was a modified math 10 class, last period on a party-night Friday. . . desperation to have learning occur led me to try some magic. A shortcut for squaring 2-digit numbers ending in 5, it was appreciated by students in this pre-calculator</p>	Sharing experiences	11g-34

Narrative	Analysis Categories	Code Line Count
<p>age, not with it's beauty but with the work that it saved. They also responded to me asking them to check me out in case I was crazy. They wanted to use the shortcut on other numbers and I told them they couldn't, they insisted so I said fatefully, "I'll prove it to you." They then proceeded to destroy my deodorant by making adjustments to the shortcut to make it work! Those students had done 8 pages of handwritten work - the most of any 'traditional' class of the entire year. They were active, excited, involved and they all learned it and remembered it for quite a while. I've used this as a stepping stone in all my classes to continue building dynamically on their knowledge and understanding. I'm excited to tackle ideas and learn with them. My best 'lessons' have happened in learning together, exploring, connecting, extending what is happening. You only need to have one of your grade 9 students invent integral calculus once to be sold forever on constructivism.</p> <p>Ooops, I'm preaching now but can you hear the enthusiasm for this topic???</p>		
<p>6:17) 02-NOV-2000 08:16 Wilhelmina "Billie" Mazza (billiemscd) Fred. I didn't look at your response as preaching. I think incidents like this - and the idea that precipitated it may provide others with a "jumping off" point. Many are afraid to put their big toe in the water for fear of failure! or because their students will loose respect! Your story may help!</p>	Sharing experiences	11g-7
MISSING 6:18 – 6:26	Equipment induced silence/confusion	10Q
<p>6:26) 11-NOV-2000 06:33 Brooke Bertholet (brooke) Deb: I do not teach at your level, for I am a generalist Fifth Grade facilitator. Yet, like you, I emphasize to my students the importance of mental math. I usually have a session per week given to it. What I do is give each student lined graph paper. I go around the room giving a problem orally to each individual student. They have to listen closely, and the rest do as well</p>	Sharing experiences	11g-66

Narrative	Analysis Categories	Code Line Count
<p>trying to see if they can get the answer. I wait, as do the other students, for the answer. No one is allowed to write anything, yet. Answers from others, which are shouted-out, or any verbal indications of what is right or wrong are not allowed. When a student gives an answer, then they are to describe fully on paper how they arrived at their solution. After everyone has been given this chance, we then go around the room and have each student present their problem and read their solution description. The results are fascinating and the opportunity for a discussion of mathematical ideas is opened and greeted with enthusiasm. Due to time constraints, I am not always able to do this every week..yet, the kids don't miss an opportunity to start chanting "mental math, mental math!" They, and I truly enjoy it.</p> <p>I've had a smiliar experience as Fred's regarding the student who only wants to be told how to do a problem and not be "made" to think anything because math was supposed to be only "cut and dry" (and, at my level, some bit of pasting). Such a response is unfortunate, and it had me become very embarassed in front of my colleagues and parents. Yet, I still "stay the course" with the objective. As was posted here, in this seminar, as an educational quote, John Dewey in "How We Think" emphasized a century ago that being taught how to think is more important than being what to think. Sometimes I'm surprised that in our profession we are still having the same discussion and that Dewey's distinction is still problematic.</p> <p>What's on my mind is the incorporation of spatial reasoning into the classroom every week of the year and not only during the coverage of the geometry chapter in our text. We do have a period each week, which I am able to faithfully provide for the kids, just for the exploration of this area. We have tackled many topics so far this year, and the most challenging one has been the construction of a sphere from paper using pencil, compass, and crayons. The results were magnificent and the model of the Lenart sphere very useful. We are now turning to exploring "geometry" in our world, finding concrete examples of</p>		

Narrative	Analysis Categories	Code Line Count
<p>geometrical principles and usage in our daily lives. Toward the end of the year, we will build (as my class did last year) a large icosahedron. Yet, I'd love to know what my colleagues are doing in this area and what ideas they may have to spur me and the kids along. As well, of course, how to assess the kids development and appreciation of spatial reasoning. Any responses and suggestions would be greatly appreciated. Thanks again, ever so much.</p>		
<p>6:27) 12-NOV-2000 02:49 Christine Palmer (cmpalmer)  I definitely emphasize the use of mental math strategies, similar to those mentioned above, for my seventh grade students. Whenever possible, we stress things like:  Left-to-right operations ( <math>25 + 38 = 20+30 + 5+8 = 50 +13</math> )  Multiplication by 4 as doubling and doubling again  <math>83 + 58 = 80 +61 = 1</math> more than <math>80 + 60 = 141</math>  <math>83 - 58 = 79 - 54 = 25</math>  Knowing the short-cut for multiplying 2 digit numbers by 11  Use of fractions to find decimal parts  (e.g. <math>0.75 \times 824 = \frac{3}{4} \times 824 = \frac{824}{4} \times 3 = 206 \times 3 = 618</math>) etc</p> <p>I find that the best way to encourage my students to learn such "short-cut strategies" is to beat them at computations as often as possible. As they realize that I can get the answers faster "my way" than they can, "punching numbers mindlessly into a calculator", they want to know, "How does she do that?"</p> <p>As a matter of fact, when we changed math series a few years ago, I was thrilled that the text being piloted actually included such short-cuts. Unfortunately, the following year, I read that the publisher had removed those same "short-cut strategies" from its final edition, because they had too many complaints, the first year, that these strategies were "too hard." How sad for the teachers and students who no longer have those strategies included in their resources.</p>	<p>Sharing experiences</p>	<p>11g-32</p>

Narrative	Analysis Categories	Code Line Count
<p>6:28) 12-NOV-2000 12:40 Fred G. Harwood (fharwood)</p> <p>Shortcut for multiplying 2-digit numbers by 11? One year I had a student say that he just spread the two numbers apart and added the two to place in the middle.</p> <p>Ex. <math>35 \times 11 = 3 \_ \_ 5 = 3(3+5)5 = 385</math></p> <p>So I asked what do you do with ones like this, <math>47 \times 11</math>? He replied that he used the carry over to make 517 instead of <math>4(11)7</math>. I then asked the class if they could make this work for 3, 4 and larger digits. It took that first Gr. 10 class 20 minutes to discover how to extend the shortcut. I then walked down the hall for my next class, this one Gr. 8's and showed them Tim's two digit shortcut and asked them to try to extend the concept to larger multipliers and they created the same system of extension in 10 minutes. I asked the Gr. 8's, "Why do you think you could invent this faster than the Gr. 10's?" They replied, "We've been working with patterns for so long that we're getting really good at them!"</p> <p>I won't give away the extension until some people try it out.</p> <p>Another anecdote on 11 that I vividly remember as a way to build motivation and success in mathematics education is when an average Gr. 10 came back from a home assignment of using Pascal's Pyramid to do binomial expansions to ask me, "Did you notice Mr. H that the pyramid are the powers of 11?" We quickly verified the first few and then used carry overs to confirm the larger ones. I then went to my 3 books on the Pyramid and only one of them had a reference to it! I then named Pat Wong's discovery 'the Wong Way' and he went on to a first class standing in Honours Math 12. It revolutionized how he approached the subject and actively sought out connections from then on. He was motivated to get his name on another invention/discovery.</p> <p>Christine, I find many students are motivated to challenge the teacher's speed. No one likes to feel inferior. It causes them to reflect, "Is there a faster way?" The 'shortcuts' are hard if you're planning on remembering them all. They reveal the essence of number and develop real</p>	<p>Sharing experiences</p>	<p>11g-54</p>

Narrative	Analysis Categories	Code Line Count
<p>numeracy skills. They also serve as a wonderful source for student discovery and constructivism. One of my "E" Gr. 8's, ie. the lowest of the low, invented an easy way to convert all 101st fractions to 4-digit repeating decimals in his head and it drove the rest of the class (and his previous teachers) crazy trying to match his speed.</p> <p>Try this folks, don't quit on one method until you come up with one that a Gr. 2 could do.</p>		
<p>6:29) 14-NOV-2000 15:15 Rick Norwood (rnorwood)</p> <p>I think some kinds of mental computation are more important than others. For example, while it is fun to be able to multiply two digit numbers "in your head", there really is not much call for that. On the other hand, taking 15% in your head, or calculating sales tax in your head, are very useful skills. I think estimating square roots in your head is very important, e.g. The square root of 30 is 5 point something. I think working with simple fractions in your head is very important, e.g. <math>\frac{1}{2} - \frac{1}{3} = \frac{1}{6}</math>. I also think "seeing" graphs in your head is important, e.g. <math>y = 3x + 2</math> starts in the third quadrant, crosses into the second quadrant at <math>-\frac{2}{3}</math>, and then crosses into the first quadrant at 2, and goes up.</p>	Sharing experiences	11g-16
<p>6:30) 15-NOV-2000 00:18 Erin O'Hara-Rines (ohara)</p> <p>Here's a new topic for discussion, if anyone would like to respond: how important is the role of communication-based activities in the area of math? I am a third-grade teacher who is currently investigating this question by conducting action research. Have any of you emphasized oral and written discussions about math, especially those relative to conceptual understandings? If so, what impact has this approach had on your students' success? I teach in Oregon, which in its assessment requirements is focusing heavily on students' abilities to express thought processes with a high degree of clarity.</p>	Sharing experiences	11g-14

Narrative	Analysis Categories	Code Line Count
<p>6:31) 15-NOV-2000 03:06 Christine Palmer (cmpalmer)</p> <p>Communication of mathematics has become more important in PA as well, since the state assessments emphasize communication PERIOD. I have always believed that if one cannot correctly and consistently communicate the math s/he is doing, then one does not REALLY understand it. Not only that, but I stress to my students that "saying it" to themselves and/or writing about it helps them know what they understand about what they are doing. I even assign what we call a "write@" now. Sometimes I ask my students to pre-read the textbook and "write@" what they understand from their reading. Sometimes I ask them to do a "write@" what they did in a solution. Early in the year this year, I had a student thank me for assigning the "write@" because she said she was understanding the math textboook, and the math that we did, for the first time in her life. She now assigns herself "write@" even when I don't, because she knows that it makes a difference in her understanding. By writing about what she understands, she has discovered that she knows far more than she thought she did.</p>	<p>Sharing experiences</p>	<p>11g-25</p>
<p>6:32) 15-NOV-2000 13:42 Rick Norwood (rnrwood)</p> <p>I try to communicate every new idea to students with the spoken word, with the written word, with pictures, with tactile manipulation of objects, with abstraction, and with examples.</p> <p>One little trick that has helped me to get students to talk mathematics. If they want me to work a homework problem at the board, I have them read me the homework problem. Their eagerness to have me work the problem overcomes their shyness about reading. And I can gently correct errors. If they say, "O.K., now we've got that funny looking thing like a circle with a line through it," then I can suggest "Theta?" "Yeah, theta. That." If they say, "f times x" I can suggest, "f of x?" and explain that even though function action looks a lot like multiplication, it is really different.</p>	<p>Sharing experiences</p>	<p>11g-17</p>

Narrative	Analysis Categories	Code Line Count
<p>6:33) 15-NOV-2000 14:17 Carole Bilyk (cbilyk) I'm sorry that I didn't have time last week to attend the conference for very long. The discussions above are extremely interesting and heartening to me in my work.</p> <p>A few years ago, I started using "Mental Math" with my students as part of a pilot project with a new curriculum. The course was Senior 2 Pre-Calculus (our grade 10 pure, theoretical course). Having taught this grade for a few years and knowing some of the problems my students always had, I was looking forward to something that might help the students in remembering important concepts and having certain skills at their fingertips. The teacher who showed us the Mental Math activity told us that he started every class with Mental Math. Because he gave us a huge package of materials, I was able to start the year with this new idea. Every student of mine had a scribbler and the scribbler stayed in the classroom. The students started out by making four quadrants and using one quadrant for each day. (Some students made eight or ten sections as the year went on because they didn't want to purchase a new scribbler!) At the start of every class, I would put 9-15 questions on the overhead. The students would get 2-3 minutes to do the questions. I didn't restrict any writing that they wanted to do, but I restricted the time. This forced them away from trying to write every step (my version of Mental Math - I know some people would disagree, but this worked for me in my classroom). Students would exchange books, and we would mark the assignment. After ten assignments, the students would drop the lowest two and average the eight remaining. This mark ended up in my mark book. After doing this for a few months, we came to the Rational Expressions unit. Every year that I had taught previous to this one, the students struggled with this unit. I tried to help them see that the whole unit revolved around factoring the various polynomials. It never seemed to work. So, I approached this unit with the usual dread and warned the students that this was a tough unit and we would slug through it together. As the unit went on, the students started asking why I said this was a tough unit.</p>	<p>Sharing experiences</p>	<p>11g-74</p>

Narrative	Analysis Categories	Code Line Count
<p>"It's just factoring, Mrs. Bilyk." I couldn't believe it. I tried to say that for years, but the students didn't see it. At least not until they had practiced factoring on a regular basis through mental math and didn't see the factoring as a new step. I saw many other benefits to using mental math everyday and starting using it with all my classes.</p> <p>I also liked my students to estimate sales tax (which in Manitoba is 14%). We did lots of 15% of _____ questions. The students found it interesting and could see the practical application when shopping for clothes or buying food at the local fast food restaurant. The other "trick" that I used a lot was squaring numbers that end in 5. It isn't an extremely useful trick outside of the math classroom, but it is a neat patterns exercise.</p> <p>Along with my belief that Mental Math type activities are crucial is my interest in using writing in the math classroom for understanding. This is a particular area of interest and I'm looking forward to rereading the suggestions given and trying new things with the people I work with.</p> <p>I'm glad I signed up for this online conference. It is well worth the money and time spent.</p>		
<p>6:34) 15-NOV-2000 19:48 Fred G. Harwood (fharwood)</p> <p>With the mental percentals, isn't it better to do a lot of different percentages like 10%, 11%, 15%, 20%, 25%, 50%, 30%, 35%, 33.3% etc. so they get the bigger concepts of combining easier to calculate percentages, fractional equivalent et al, than to memorize one trick! It is always better to embed the trick in a bigger picture that is more empowering to the students PLUS it really gets them thinking and reasoning! Find three different easy ways to calculate 5% of 300. How would you find 7.5% of 440? What is 12.5% of 8000? These all can be done using the concepts that empower 15%. What about 120%, 125%, 102% - these can lead to a good discussion of athletes giving 110%.</p>	Sharing experiences	11g-16

Narrative	Analysis Categories	Code Line Count
<p>6:35) 16-NOV-2000 09:47 Fred G. Harwood (fharwood)  On another topic, my Grade 10's had a great time early in October with some fascinating decimal patterns. It was an excellent case of a student making a link from a couple of ideas I presented and then under the challenge to take it further, the kids knocked the lid of some amazing results. I'm attaching the file that was written up for our Vector magazine in BC.</p>	Sharing experiences	11g-8
<p>6:36) 16-NOV-2000 09:49 Fred G. Harwood (fharwood)  The post is gobblygook. Let me send it to Susan and see if she can convert the frames to meaningful posting. Sorry for the waste of your time.</p>	Sharing experiences	11g-4
<p>6:37) 16-NOV-2000 10:14 Fred G. Harwood (fharwood)  Trying again with an HTML save instead.  <a href="http://rheingold.caucus.com/~ra1/LIB/poolside_cafe/fharwood/00060037/Science_20of_20Patterns_20in_20h.t.m.l">http://rheingold.caucus.com/~ra1/LIB/poolside_cafe/fharwood/00060037/Science_20of_20Patterns_20in_20h.t.m.l</a>   Once the page is open, save it somewhere (like your desktop) and then go back to your browser and Open Page (from wherever you saved it) and it should now look beautiful and be printable???</p>	Sharing experiences	11g-9
<p>6:38) 16-NOV-2000 10:15 Fred G. Harwood (fharwood)  Gulp! I leave it in your capable hands, Susan. Neither link looks good.</p>	Sharing experiences	11g-2
<p>6:39) 16-NOV-2000 12:28 Carole Bilyk (cbilyk)  Fred: On your response to my examples - I agree completely. I also try to get my students to find many different percents mentally. The 15% was the most common only because it was the most easily applicable to the students. In Manitoba, we have been doing the kinds of activities that you suggest in one of our courses at the Grade 9 level. I hope that it will be used with lots of students at all sorts of</p>	Sharing experiences	11g-10

Narrative	Analysis Categories	Code Line Count
different grade levels.		
<p>6:40) 16-NOV-2000 14:57 Fred G. Harwood (fharwood)</p> <p>The last URL that I listed will bring up a page with HTML tags showing. Save the page to your desktop and then go to open page and it will open up to show you all the spreadsheets and text properly formatted. Sorry for the run around. I'm learning too.</p>	Sharing experiences	11g-6
<p>6:41) 16-NOV-2000 15:01 Susan Doherty (squinnxx)</p> <p>SEEKING A SCIENCE OF PATTERNS? by Hugh McRoberts teacher, Fred Harwood and students of their Math Club: Laura Dunwoody, Jeannie Chan, Grace Yeh, Novid Dadmand, Wilson Lin and Mark Yen.</p> <p>Years ago, Dr. Usiskin of Chicago teased those of us attending the Pacific Northwest Math Conference at the Richmond Inn with the patterns surrounding the decimal conversion of <math>\frac{1}{7}</math>th and this has changed my math teaching. Every year since, my students have done some research to try to extend this type of knowledge and to see the science of patterns that connect mathematic ideas. My students take the roles of real mathematicians gathering data, seeking patterns/connections and then building understanding and possibly application.</p> <p>This year, proximity and good questioning has led to an exciting breakthrough for us. In wanting students to change their approaches to thinking about mathematics, I demonstrated that the <math>\frac{1}{7}</math>th pattern of 0.142857 repeating can be built by thinking of 7 doubled, 14 doubled, 28 doubled, 56 doubled, 112 doubled, etc. These numbers are continually placed in two digit registers with remainders placed in the previous columns as in Figure 1. Note: 112 and 14336 are bold face to show how to enter the carried over digits. The bottom is the total of the columns added from the right. Note that the pattern is accurate to the 29th digit and will continue to be accurate when run further.</p>	Sharing experiences	11c-38

Narrative	Analysis Categories	Code Line Count
<p>0.142856122448969284683672448876</p> <p>1248173571438673469387</p> <p>125112245911</p> <p>0.142857142857142857142857142855</p>		
<p>6:42) 16-NOV-2000 15:08 Susan Doherty (squinnxx)</p> <p>Figure 1 A few years ago, at another math conference, people were excited to hear that <math>1/89</math>th could be created by fitting the Fibonacci numbers into a similar grid made up of single digits and carry-overs as in Figure 2. 13, 144 and 6765 are shown in bold face on how they were entered with the carry-overs in the previous columns.</p> <p>0.011235831459437077415617853819</p> <p>0My s84371898864156291124123695</p> <p>517976303482</p> <p>0 12460786516742112472911311358</p> <p>0.0112359550561797752808988603430</p> <p>0.0112359550561797752808988764044</p> <p>Figure 2 This October, I was showing the students these two patterns and teaching them how to create long decimal strings using their calculators. [I've also included in the appendix, a program from Mark Yen for having the TI-83 calculator to find them automatically. The next day, Gr. 10 student, Novid Dadmand came back with a pattern for <math>1/17</math>. He took the starting digits of 0.0588 and then repeatedly multiplied by 4 and placed the result in the next four registers. Carry-overs were again placed in the previous columns. For example, enter 588 into your calculator and then have the answer constantly multiplied by 4. Repeated entering will give you the next sets of digits to enter as in Figure 3.</p>	<p>Sharing experiences</p> <p>Sharing experiences</p>	<p>11c-14</p> <p>11c-24</p>

Narrative	Analysis Categories	Code Line Count
<p>The products 2352, 37632, &amp; 602112 are shown in bold face. Notice the 16 digit repeating pattern of 0.0588235294117647 and how the first 8 digits add to nines with the last 8 digits. [This is true of all prime denominator fractions of an even period. eg. <math>1/7 = 0.142857</math> with <math>142+857 = 999</math>. <math>26/101 = 0.2574</math> with <math>25+74 = 99</math> ] Naturally, this pattern has been named 'the Super Novid'.</p>		
<p>6:43) 16-NOV-2000 15:12 Susan Doherty (squinnxx)</p> <p>Figure 3 The fourth pattern, shown in Figure 4, represents the conversion of <math>1/19</math>th. This pattern I discovered while encouraging my students to look for others. It has been named the H-Bomb as I planned to drop it and my students discoveries on the Pacific Northwest Conference in Victoria. The pattern is formed like the <math>1/7</math>th pattern but with the first two digits of 0.05 being multiplied by 5 and placed in the next two digits, these are then multiplied by 5 and placed in the next two digit registers but with the 1 in 125 carried over to the previous register. The consecutive powers of 5 are placed in the next registers so that the ending 25 are in the last two registers and the carried over digits stacked in the prior registers. <math>5^{12} = 244140625</math> are shown in bold face. The 18 digit repeating pattern is shown starting to repeat with the 0526. Again more digits are needed to complete this pattern. Some of my students are writing computer programs to run the data further. It is good mathematics to teach them how to expand their decimal answers beyond their calculator digit limitations and to multiply numbers beyond the limits of the calculators. It also provides a great opportunity for estimating.</p> <p>0.05252525252525252525252525252525</p> <p>16315681063156810631568106179957</p> <p>68214705157894531948442003178739</p> <p>69212610525291473315763890531947</p>	<p>Sharing experiences</p>	<p>11c-32</p>

Narrative	Analysis Categories	Code Line Count
0.052631578947368421052627565018		
<p>6:44) 16-NOV-2000 15:13 Fred G. Harwood (fharwood)</p> <p>Sorry, Susan. I think the previous 6:37 and 6:40 in combination work well. Try this and let me know how it goes for you. I hope you didn't work for a long time on it!?!?!?</p>	Student initiated discussion w/teacher	11h-4
<p>6:45) 16-NOV-2000 15:14 Susan Doherty (squinnxx)</p> <p>Figure 4 These opened the floodgates and in the next two days 7 more patterns were discovered, three by Jeannie Chan, three by Grace Yeh and one by Wilson Lin. Laura Dunwoody wrote a beautiful program for the TI-83 to test any pattern to the limits of the calculator's ability. I've included it in the appendix.</p> <p>Jeannie Chan's discoveries are: 1/23 are taking the first two digits (0.04) and multiplying by 8 constantly with the last two digits entered in the next two places and carry-overs in the previous registers.</p> <p>0.043256488472760864129668445216</p> <p>2206310858688097283695544</p> <p>113043810879673902560</p> <p>1867369459772332</p> <p>542434890023271999221</p> <p>0.043478260869565220259595599616</p> <p>0.0434782608695652173913</p>	Sharing experiences	11c-19
<p>6:46) 16-NOV-2000 15:15 Susan Doherty (squinnxx)</p> <p>1/83: use the first three digits (0.012) and multiply by 4</p>	Sharing experiences	11c-33

Narrative	Analysis Categories	Code Line Count
<p>1/91: use the first two digits (0.01) and multiply by 9</p> <p>Wilson Lin's pattern is for 1/97: use the first two digits (0.01) and multiply by 3.</p> <p>0.010309278143298761834947412369272165969</p> <p>07114432989151753597834041414432913</p> <p>0.010309278350515463917525773194</p> <p>0.010309278350515463917525773195</p> <p>Grace Yeh's YKY patterns:  1/29: use the first two digits (0.03) and multiply by 13  1/43: use the first three digits (0.023) and multiply by 11  1/47: use the first two digits (0.02) and multiply by 6</p> <p>The evidence is overwhelming that a science of patterns is at work here. The concept of building these decimals are applied here to many prime denominators and some composite denominators like 91. The search is in its infancy so many students will be able to get in on the discoveries. This is a rich, open-ended theme that spawns many research questions: Why do these exist? Is there a pattern for all repeating fractions? Is there a Unifying Theory to explain these phenomena? Will it make my students and I rich?</p> <p>Some of these questions are much easier to answer than others. Have fun searching!</p> <p>Submitted by Fred G. Harwood, October 17, 2001</p>		
<p>6:47) 16-NOV-2000 15:16 Susan Doherty (squinnxx)  Hey Fred, did these posting come out right? Just that one image link is broken. Can you send me the image?</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-3</p>
<p>6:48) 16-NOV-2000 19:00 Fred G. Harwood</p>		

Narrative	Analysis Categories	Code Line Count
(fharwood) Did you try saving the html link to your desktop and then opening the page in your browser? The format they're in is a little hard to read because the row heights are so large. Thanks for your hard work though.	Student initiated discussion w/teacher	11h-5
6:49) 16-NOV-2000 20:21 Fred G. Harwood (fharwood) Looks great, Susan. Thanks. Which method did you use for translating/reading?	Student initiated discussion w/teacher	11h-2
6:50) 16-NOV-2000 23:28 Susan Doherty (squinnxx) Just saved it and opened it, copied and pasted. Just had to do it in several hunks.	Teacher initiated discussion w/student	11d-2

**Equipment induced silence/confusion**  
**Sharing experiences**  
**Sharing experiences**  
**Student initiated discussion w/teacher**  
**Teacher initiated discussion w/student**

**10Q-1**  
**11c-160**  
**11g-569**  
**11h-11**  
**11d-10**

**Poolside Café, Item 1**

**Table # 123: Poolside Café, Item 7, Teacher Initiated Discussion w/ Student**

Narrative	Analysis Categories	Code Line Count
<p>PBS MW Teacher/Educators Poolside Cafe Item 7</p> <p>Item 7 30-OCT-2000 18:30 Susan Doherty (squinnxx) Quite a few teacher educators are registered so I thought you might want a place to network and share ideas with each other. Students, too!</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-3</p>
<p>7:1) 30-OCT-2000 20:11 Deb Burdick (dburdick) Greetings From Alaska- I would love to get new ideas for creative cooperative learning activities and other presentation strategies that you can do with teachers during professional development training.</p>	<p>Student initiated discussion w/ teacher</p>	<p>11h-4</p>
<p>7:2) 30-OCT-2000 20:30 Wilhelmina Mazza (billiemsd) To Deb from Alaska and others. I am interested in similar information.</p>	<p>Sharing experiences</p>	<p>11g-2</p>
<p>7:3) 31-OCT-2000 09:03 Kristy Paterson (shoozi) To Deb and others- I've found some great resources for training from The Brain Store at <a href="http://www.thebrainstore.com">www.thebrainstore.com</a> and I also like some of the materials from the Video Journal.</p>	<p>Sharing experiences</p>	<p>11g-4</p>
<p>7:4) 31-OCT-2000 09:39 Susan Doherty (squinnxx) Thanks Kristy. I've added your recommendations to the resource center.</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-2</p>
<p>7:5) 31-OCT-2000 17:55 Barbara Middleton (bjmiddle) Our district is in the process of adopting a math reform program. After much research, it is my opinion that Everyday Math from the University of Chicago is the best for a continuous flow from grades kindergarten to sixth grade, student investigation, and their spiral approach</p>	<p>Sharing experiences</p>	<p>11g-13</p>

Narrative	Analysis Categories	Code Line Count
<p>to learning. The choices has been narrowed down to Everyday Math and Success For All Mathwings. Since we just began the Success For All reading component this year, the Mathwings must be a choice. Any information from anyone. Have you used either program? What is your opinion? I would appreciate any input at all. Thank-you.</p>		
<p>7:6) 01-NOV-2000 10:31 Craig Morgan (cmorgan)  Barbara, I don't know Success for All Mathwings, but my wife was involved in choosing Success for All programs for her inner city school and she didn't care for their programs. She left for another job before the choice was made.</p> <p>I can tell you about Everyday Math. I piloted the program for a year and then taught the 5th grade curriculum for another year. I am now the Math/Technology Facilitator for our district. We spent 5 years looking for standards based programs to use in our district. After finding and looking at TERC, Trailblazers, Everyday Math, Connected Math (upper grades), Math in Context, we chose Everyday Math for basically the same reason you stated in your note. It has a continuous flow, spiral approach, student investigations, and raised the Math bar in our district. I'm not sure the teachers have the background in math to teach it exactly, however, the teachers guide will even tell the teacher when to blow his/her nose if necessary. For a program, it has mental math, daily practice, challenges, games, cooperative learning, discussion, real life problems... on and on. It isn't perfect, but it's the best &lt;program&gt; on the market today. The problem solving (open ended) isn't the strongest, but I feel that is because the teachers really don't understand what assessment truly involves. That's why I am here. Others may have parts or activities that are good, but this is a complete &lt;program&gt;. Our district average went up 17 points on the average in the first year we implemented it across the levels k to 6. I wonder what will happen when the students go through their entire elementary grades with it.</p>	<p>Sharing experiences</p> <p>Sharing experiences</p>	<p>11g-5</p> <p>11g-29</p>

Narrative	Analysis Categories	Code Line Count
<p>7:7) 01-NOV-2000 12:28 Nora Werme (nwerme)            Barbara and Craig, Just thought I'd put my 2 cents in...as a parent, I can tell you that Everyday Math looks pretty good...my children seem to enjoy it quite a bit (we just moved to a new school that uses it). Anything that seems "fun" while actually "teaching" something is a good thing. I like the fact that it helps students become more well-rounded mathematically--it doesn't just plod on for weeks on one subject alone.</p>	<p>Sharing experiences</p>	<p>11g-9</p>
<p>7:8) 03-NOV-2000 06:27 Jeanine Brizendine (eteacher)            Another good supplemental resource is put out by Developmental Studies Center entitled Number Power-A Cooperative Approach to Mathematical and Social Development (K-6). They do an excellent job on blending the cooperative grouping issues into instruction. There web address is <a href="http://www.devstu.org/">http://www.devstu.org/</a>.</p>	<p>Sharing experiences</p>	<p>11g-7</p>

**Sharing experiences**  
**Student initiated discussion w/ teacher**  
**Teacher initiated discussion w/student**

**11g-69**  
**11h-4**  
**11d-5**

**Poolside Café, Item 1**

**Table # 124: Poolside Café, Item 8, Education Stories**

Narrative	Analysis Categories	Code Line Count
<p>PBS MW Edu Stories Poolside Cafe Item 8</p> <p>Mathweb 2000 Center , Poolside Cafe , Item 8</p> <p>Education Stories</p>		
<p>Item 8 30-OCT-2000 18:35 Susan Doherty (squinnxx)</p> <p>Everyone has an education story or two. Funny, heartwarming, frustrating, what's your story. Share it here.</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-3</p>
<p>8:1) 30-OCT-2000 20:50 Dr. Carole E. Gould (grammie)</p> <p>This opens a wide world of thoughts, but the first one is Elmer. He had a police record longer than your arm. He came from a highly dysfunctional family where dad drove a liquor truck, was rarely home, took kids 'on the road' from time to time so he could actually see them (meaning out of school for week at a time). Mother tried to foster some kind of structure, but with 13 to feed and clothe, she was at a slight disadvantage.</p> <p>Elmer loved engines. I borrowed a VW engine which we let Elmer take apart in the rear of the classroom. The goal was to get him to write down what he did and to verbalize how he did it on paper. He was to draw pictures of the various parts of the engine and he would get grades in English and math for his work. He also need to learn to read more adequately, so we got him the mechanics manual for the engine. He used this as a reference guide and a source of identification of parts (spelling and reading).</p> <p>The pay off was Elmer went to school with the REAL mechanics for a second course in their training. For the first time in his whole school life Elmer made an 80%!</p>	<p>Sharing experiences</p>	<p>11g-25</p>

**Teacher initiated discussion w/student**  
**Sharing experiences**

**11d-3**  
**11g-25**

**Poolside Café, Item 1**

**Table # 125: Poolside Café, Item 9, Educational Quotes**

Narrative	Analysis Categories	Code Line Count
<p>PBS MW Ed Quotes Poolside Cafe Item 9 Educational Quotes Item 9 30-OCT-2000 21:59 Susan Doherty (squinnxx)</p> <p>A great suggestion from Deb Burdick... and here's hers to go first...</p> <p>The Definition of Learning is "Knowledge Construction" I always think of this when I am designing my lessons if I really want students to "learn" something I have to give them opportunities to construct the knowledge in a way that is meaningful to them.</p>	<p>Teacher Initiated Discussion w/student</p> <p>Sharing Experiences</p>	<p>11d-2</p> <p>11g-6</p>
<p>9:1) 31-OCT-2000 01:13 Michael E Matthews (hamath) Kids don't care how much you know, Until they know how much you care!</p>	<p>Sharing Experiences</p>	<p>11g-2</p>
<p>9:2) 31-OCT-2000 07:41 Carey Bolster (bolster) Good teachers don't answer questions, they question answers!</p>	<p>Sharing Experiences</p>	<p>11g-2</p>
<p>9:3) 31-OCT-2000 08:06 Maggie McGatha (mcgatham) If you aren't making mistakes, you aren't learning!</p>	<p>Sharing Experiences</p>	<p>11g-2</p>
<p>9:4) 31-OCT-2000 09:07 Kristy Paterson (shoozi) If in the last few years you haven't discarded a major opinion or acquired a new one, check your pulse Gelett Burgeos</p>	<p>Sharing Experiences</p>	<p>11g-3</p>
<p>9:5) 01-NOV-2000 10:52 Cathy Ortolan (pchsmath) Tell me, and I'll forget. Show me, and I may remember. Involve me, and I will understand.</p>	<p>Sharing Experiences</p>	<p>11g-3</p>

Narrative	Analysis Categories	Code Line Count
Chinese proverb		
9:6) 02-NOV-2000 17:04 Carole Bilyk (cbilyk) The object of teaching a child is to enable him to get along without his teacher. (Elbert Hubbard)	Sharing Experiences	11g-3
9:7) 02-NOV-2000 17:05 Carole Bilyk (cbilyk) The aim of education should be to teach the child to think, not what to think. (John Dewey)	Sharing Experiences	11g-2
9:8) 09-NOV-2000 15:33 P. Mark Taylor (taylormar) Effective teachers seldom teach. They encourage, support, and expect learning.	Sharing Experiences	11g-2
9:9) 10-NOV-2000 13:37 Deb Burdick (dburdick) EDUCATION Starts with MOTIVATION not INFORMATION	Sharing Experiences	11g-2
9:10) 10-NOV-2000 13:38 Deb Burdick (dburdick) How to tell students what to look for without telling them what to see is the dilemma of teaching. -Lascelles Abercrombie	Sharing Experiences	11g-3
9:11) 14-NOV-2000 14:26 Sharon Taylor (sharontaylor) We have to reinvent the wheel every once in a while, not because we need a lot of wheels; but because we need a lot of inventors. - Bruce Joyce	Sharing Experiences	11g-4
9:12) 14-NOV-2000 14:27 Sharon Taylor (sharontaylor) Teaching is the art of assisting discovery. - Mark Albert Van Doren	Sharing Experiences	11g-4

**Sharing Experiences**  
**Sharing Experiences**  
**Teacher Initiated Discussion w/student**

**11c-6**  
**11g-32**  
**11d-2**

**Poolside Café, Item 1**

**Table # 126: Poolside Café, Item 10, Online Improv**

Narrative	Analysis Categories	Code Line Count
<p>Poolside Cafe Item 10 Mathweb 2000 Center , Poolside Cafe , Item 10</p> <p>Online Improv</p> <p>Item 10 04-NOV-2000 10:28 Lisa Kimball (lisa) After a week of intense focus on our topic, it's time for a little fun! Improv Games can be a lot of fun to play in the classroom, at workshops, and as part of training programs. They make great ice-breakers. Here's one we can try here. It's called THE ALPHABET GAME. The idea is to tell a story that's never been told before. Each person gets to contribute a line to the story one line at a time. The rule is, you have to start the sentence with a word that starts with the next letter of the alphabet.</p> <p>For example, if we were telling a story about Halloween it might go like this: A long time ago, before people went trick-or-treating. Candy wasn't the big thing we associated with Halloween. Dogs barked all night. Everybody was reeeeeally scared. etc... til we got through the whole alphabet! Get it?</p>	<p>Sharing experiences</p>	<p>11c-21</p>
<p>10:1) 04-NOV-2000 10:30 Lisa Kimball (lisa) Let's give it a try! The only other rule is that, tho you can add as many lines as you want, you can't enter two in a row (so let somebody else go in-between). Let's tell a story about .... THE DAY MATH SAVED THE WORLD!!!</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-6</p>
<p>10:2) 04-NOV-2000 10:32 Lisa Kimball (lisa) A group of kids were out hiking in the mountains one day when they looked up and saw something funny in the sky.</p>	<p>Sharing experiences</p>	<p>11c-3</p>
<p>10:3) 04-NOV-2000 12:49 Brooke Bertholet</p>		

Narrative	Analysis Categories	Code Line Count
(brooke) Black clouds were beginning to form and one of the kids inferred "it looks like rain!"	Sharing experiences	11g-2
10:4) 04-NOV-2000 14:22 Nora Werme (nwerme) "Could be rain or it could be snow--it could be a 'number' of things," said another.	Sharing experiences	11g-2
10:5) 04-NOV-2000 14:47 Lisa Kimball (lisa) "Do you think we should run and seek cover?" suggested one of the kids.	Sharing experiences	11c-2
10:6) 04-NOV-2000 15:16 Fred G. Harwood (fharwood) Even before others could respond, something strange descended through the clouds.	Sharing experiences	11g-2
10:9) 04-NOV-2000 16:32 Jeanne Zimet (jzimet211) Fractions, instead of raindrops, slowly floated through the sky towards them.	Sharing experiences	11g-2
10:10) 04-NOV-2000 18:10 Dr. Carole E. Gould (grammie) Grabbing their pads and pencils they began to collect data about the number of fractions falling within a set period of time.	Sharing experiences	11g-3
10:11) 04-NOV-2000 22:41 Fred G. Harwood (fharwood) Hail began to complicate the process as many were converting into repeating decimal periods of 2, 4 and even 6 digits!	Sharing experiences	11g-3
10:12) 05-NOV-2000 09:40 Elizabeth Staudenmeier (erstauden) Instead of running for cover, the hikers pulled out their rational parkas: parkas made of a space-age material that filters out rational numbers.	Sharing experiences	11g-4
10:13) 05-NOV-2000 10:41 Fred G. Harwood		

Narrative	Analysis Categories	Code Line Count
(fharwood) Just standing in the rain and hail was a complex process.	Sharing experiences	11g-2
10:14) 06-NOV-2000 08:26 Wilhelmina "Billie" Mazza (billiemscd) "Keep your fractions and decimals under cover until we can sorth them out!" said one of the hikers!	Sharing experiences	11g-3
10:15) 06-NOV-2000 13:57 Nora Werme (nwerme) Laden down with so much data, some of the hikers began to stumble back and forth like dots on a number line.	Sharing experiences	11g-3
10:16) 06-NOV-2000 19:40 Fred G. Harwood (fharwood) Many were becoming irrational!	Sharing experiences	11g-1
10:17) 07-NOV-2000 01:36 Christine Palmer (cmpalmer) Never before had the hikers been so intrigued with their experience with numbers.	Sharing experiences	11g-2
10:18) 07-NOV-2000 11:55 Pamela Coffield (pamfield) Out of the blue, one of the irrational hikers began to spout "3.141592653... and wouldn't stop spitting out digits with no pattern.	Sharing experiences	11g-3
10:19) 07-NOV-2000 11:58 Wilhelmina "Billie" Mazza (billiemscd) "PI!" called another irrational hiker.	Sharing experiences	11g-1
10:20) 07-NOV-2000 12:18 Carole Bilyk (cbilyk) Quit yelling, called another hiker.	Sharing experiences	11g-1
10:21) 07-NOV-2000 13:29 Rick Norwood (rnorwood) "Reality can only be saved if we can find the smallest fraction," concluded one of the hikers.	Sharing experiences	11g-2

Narrative	Analysis Categories	Code Line Count
10: abl07-NOV-2000 15:56 Anna Maria Licameli (alicameli) "Smallest?" asked another. "How can there be a smallest fraction?"	Sharing experiences	11g-2
10:23) 07-NOV-2000 17:31 Fred G. Harwood (fharwood) This smallest fraction wouldn't be negative would it?	Sharing experiences	11g-2
10:24) 08-NOV-2000 03:10 Lana McDonald (lanad) "Unearth all fractions immediately and put them in a line",said the leader.	Sharing experiences	11g-2
10:25) 08-NOV-2000 13:58 Fred G. Harwood (fharwood) Values will be unearthed with them and we'll all be enriched and able to go to Disney World!	Sharing experiences	11g-2
10:26) 08-NOV-2000 14:07 Rick Norwood (rnorwood) "Won't we need a microscope to find the smallest fraction?" someone asked.	Sharing experiences	11g-2
10:27) 08-NOV-2000 22:32 Joyce Bytnar (joybyts) "X-amine closely that tiny little fraction right there, next to zero," commanded the hiker with the microscope.	Sharing experiences	11g-2
10:28) 09-NOV-2000 11:12 Fred G. Harwood (fharwood) You might even consider an electron-scanning microscope before you realize that the answer is actually . . .	Sharing experiences	11g-3
10:29) 09-NOV-2000 14:17 Wilhelmina "Billie" Mazza (billiemscd) "Zillions!" Isn't that the same as infinity?	Sharing experiences	11g-1

Narrative	Analysis Categories	Code Line Count
10:30) 09-NOV-2000 17:03 Fred G. Harwood (fharwood) Zoinks! Isn't it more than this?	Sharing experiences	11g-1
10:31) 09-NOV-2000 22:18 Lisa Kimball (lisa) What a creative crew!	Sharing experiences	11g-1
10:32) 09-NOV-2000 22:29 Lisa Kimball (lisa) How about another creativity game? This one will test our inventiveness! We pick an object. Then we try and come up with as many ways as possible to use it. The catch is that each way has to include a word that starts with the next letter of the alphabet ... Everybody can add as many ideas as they want - but only one at a time ... so let someone else go in 'between' before you add another one ... Got it?	Teacher initiated discussion w/student	11d-10
10:33) 09-NOV-2000 22:39 Lisa Kimball (lisa) So our first object is .... How many ways can we think of to use a bowling pin? (each new way starts with the next letter of the alphabet)	Teacher initiated discussion w/student	11d-4
10:34) 09-NOV-2000 22:43 Lisa Kimball (lisa) A great way to use a bowling pin is as an APPLE smasher for when we want to make APPLESAUCE!	Sharing experiences	11c-3
10:35) 10-NOV-2000 01:02 Fred G. Harwood (fharwood) BUTTER CHURNING, there's nothing better than some freshly churned BUTTER and a bowling pin is a great substitute for the real thing. Try it, you'll feel like a king!	Sharing experiences	11g-4
10:36) 10-NOV-2000 10:06 Rick Norwood (rnorwood) As a Cap, to keep rain off our bald spot.	Sharing experiences	11g-1
10:37) 10-NOV-2000 15:15 Lisa Kimball (lisa) A bowling pin could make a great DOLL ... All	Sharing experiences	11c-2

Narrative	Analysis Categories	Code Line Count
you have to do is paint a face on it!		
10:38) 10-NOV-2000 17:14 Joyce Bytnar (joybyts) If you decorate it with paper ears and a cotton ball for a tail, it could serve as the EASTER bunny.	Sharing experiences	11g-3
10:39) 12-NOV-2000 02:57 Christine Palmer (cmpalmer) Drill a hole in the bowling pin, from the top, and you've got the perfect FLOWER VASE...or drill a number of holes, in random positions, at random angles, and your FLOWER VASE can hold artificial flowers in the manner of a strawberry jar...what a wonderful gift for your favorite bowler!	Sharing experiences	11g-7
10:40) 12-NOV-2000 08:37 Lana McDonald (lanad) Bowling is a GAME, right. You can practise the facts in a variety of ways. Just write the digits 0 - 9 on each of 10 bowling pins, and establish the rules. Begin the GAME. It is fun.	Sharing experiences	11-g4
10:41) 13-NOV-2000 11:51 Nancy R. Wilson (nancywa) Stand the bowling pin in your hallway to use it as a HATRACK.	Sharing experiences	11g-2
10:42) 17-NOV-2000 09:12 Lisa Kimball (lisa) Put the bowling pin in a tray of fruit juice in the freezer and make a giant ICEPOP	Sharing experiences	11c-2

Sharing experiences

11c-33

Sharing experiences

11g-75

Teacher initiated discussion w/student

11d-20

**Poolside Café, Item 1**

**Table # 127: Poolside Café, Item 11, PBS Program**

Narrative	Analysis Categories	Code Line Count
<p>Poolside Cafe Item 11 PBS Program</p>		
<p>Item 11 04-NOV-2000 13:28 Susan Doherty (squinnxx) Anyone catch that education program that was on PBS last night? I came in halfway through. It had a silly premise of a "school sluth," but the content was interesting. One of the points that I remember most is that a school - to be an excellent school - must have a sense of purpose. Any thoughts?</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-6</p>
<p>11:1) 04-NOV-2000 15:21 Fred G. Harwood (fharwood) Stephen Covey (Highley Effective Habits) talks about having an organizational mission/vision. Every school needs to go through this process of developing their vision statement and their identity.  Our school utilized "learning together. . . meeting the challenge" and it was reworked last year to include newer staff members "learning together . . . achieving our dreams". Our code phrase was "always class" and it was amazing to see the impact this statement could have upon our students, especially our seniors in how they comported themselves for the community as well as school activities.</p>	<p>Sharing experiences</p>	<p>11g-13</p>
<p>11:2) 04-NOV-2000 15:40 Susan Doherty (squinnxx) That's the result that the program claimed. Fascinating to hear a story of how it worked in real life. The program also talked about how teachers must have time to meet and plan with one another. Planning across subjects and grade level. How could this be accomplished?</p>	<p>Sharing experiences</p>	<p>11c-6</p>
<p>11:3) 08-NOV-2000 03:56 Lana McDonald (lanad) That planning is important if staff is to embrace the school's vision. You see, the planning will involve the necessary discussion that will</p>	<p>Sharing experiences</p>	<p>11g-15</p>

Narrative	Analysis Categories	Code Line Count
<p>allow staff to clarify thoughts and ideas, build relationships and determine their values. However, this process is time-consuming and we all know that time is a limited resource.</p> <p>At our school time is scheduled for planning - every Wednesday afternoon after school is out, between 3:00p.m and 4:00p.m. Needless to say, this is not a popular decision among teachers. Those who stay deal with the urgent(This is to be taught next week) rather than the important(Stephen Covey: Highly Effective People),and therefore the effectiveness of that activity is diluted.</p>		
<p>11:4) 08-NOV-2000 14:02 Fred G. Harwood (fharwood)</p> <p>We have taken the first 10 minutes of each staff meeting. It is built into our province's accreditation process (that is under review at this time with the union protesting the time that the whole process takes) and we have 5 professional days a year and might devote one half a morning to the process every couple of years. The rest is then inculcated with continual reminders at assemblies, meetings, posters and even placed on the walls of many classrooms. I put everything of importance that I believe in (or want to adopt) on my walls to keep it in my forebrain until it becomes subconscious as well as conscious.</p>	Sharing experiences	11g-113

Sharing experiences  
Sharing experiences  
Teacher initiated discussion w/student

11c-6  
11g-141  
11d-6

**Poolside Café, Item 1**

**Table # 128: Poolside Café, Item 13, Certificate of Attendance**

Narrative	Analysis Categories	Code Line Count
<p>MW Pool 13 Certificate of Attendance</p> <p>Poolside Cafe Item 13 Mathweb 2000 Center, Poolside Café, Item 13 Resp 11</p> <p>Certificate of Attendance</p>		
<p>MISSING items 1-8</p>		
<p>13:8) 17-NOV-2000 16:19 Susan Doherty (squinnxx) Yes, it works for me!</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-1</p>
<p>13:9) 18-NOV-2000 12:17 Leslie E.J. Nielsen (lejnielsen) I am not able to open the 12 dice of Christmas... I did get it on my desktop, but the computer wanted to open it with Word. Any hints? If you prefer, just e-mail the hint to me. Thanks! Leslie</p>	<p>Equipment induced question</p>	<p>10Q-5</p>
<p>13:10) 19-NOV-2000 01:21 Fred G. Harwood (fharwood) You'll need to open it via a computer that has a pdf viewer. You can download Acrobat Reader for free if you don't have it. Do a search for Acrobat Reader and then download the version appropriate for your machine.</p>	<p>Sharing experiences</p>	<p>11g-5</p>
<p>13:11) 19-NOV-2000 11:51 Leslie E.J. Nielsen (lejnielsen) Thanks! It worked on my own computer which does have a pdf viewer! Now I know I don't have one at school!</p>	<p>Sharing experiences</p>	<p>11g-3</p>
<p>On to Poolside Cafe</p> <p>Mathweb 2000 Center , Poolside Café, Item 13 Resp 11</p> <p>Poolside Cafe Item 13</p>		
<p>MISSING ITEMS</p>		

**Equipment induced question**  
**Sharing experiences**  
**Teacher initiated discussion w/student**

**10Q-5**  
**11g-8**  
**11d-1**

**Poolside Café, Item 1**

**Table # 129: Poolside Café, Item 14, Parting Comments**

Narrative	Analysis Categories	Code Line Count
<p>MW Pool 14 Parting Comments</p> <p>Poolside Cafe Item 14 Mathweb 2000 Center, Poolside Café, Item 14 Resp 6</p>		
<p>Parting comments</p> <p>Item 14 17-NOV-2000 16:31 Susan Doherty (squinnxx) If there is anything you'd like to share with your fellow participants, the conference planners, or sponsors as we wind down this event -- Fire away!</p>	<p>Teacher initiated discussion w/student</p>	<p>11d-4</p>
<p>14:1) 17-NOV-2000 18:29 Remy Tze Yin Poon (remypoon) Can we extend this conference forever? It had been great! I learned daily and found new ideas and support from teachers all around the nation. MathWeb2000 team,thank you for all the wonderful work. When will be the next Web conference?</p>	<p>Student initiated discussion w/teacher</p>	<p>11h-6</p>
<p>14:2) 17-NOV-2000 19:54 Fred G. Harwood (fharwood) I left a parting gift for people in the certificate folder as my way of saying thanks for the enrichment and vision. Download your copy of the 12 Dice of Christmas and enjoy.</p>	<p>Sharing experiences</p>	<p>11g-4</p>
<p>14:3) 17-NOV-2000 23:00 Rebecca Dianne Posten (rebeccap) I'm sad to see this learning experience end. I would love to participant in one again. Thank you!</p>	<p>Sharing experiences</p>	<p>11g-3</p>
<p>14:4) 18-NOV-2000 01:04 Lana McDonald (lanad) Susan, you and your team had great vision and did a fantastic job. Thanks to everyone for making this conference such a worthwhile learning experience. I am looking forward to the next one.</p>	<p>Sharing experiences</p>	<p>11g-5</p>

Narrative	Analysis Categories	Code Line Count
<p>14:5) 19-NOV-2000 15:09 Marcia Banks (marciabanks) Thank you so very much for organizing the conference. It has been fun reading and learning... I am looking forward to doing this again! Marcia</p>	Sharing experiences	11g-4
<p>14:6) 19-NOV-2000 16:12 Marie Elizabeth Pink (pinkme) Thanks so much for all the organization and work that went into this conference. I gained much from the past three weeks. I will use many of the ideas in my upcoming methods course next semester. Thanks to all who presented and participated. Marie Elizabeth</p>	Sharing experiences	11g-6
<p>14:8) 19-NOV-2000 20:24 Mary Downey (mdowney) Thanks for all the ideas and interesting information. I would like to participate in another conference in the future. I think I'm finally getting the hang of how it's done. Thanks all and happy holidays. Mary Downey</p>	Sharing experiences	11g-5
<p>14:9) 19-NOV-2000 22:21 Nancy R. Wilson (nancywa) I found out about this conference quite by accident (thanks to Fred Harwood) and it has proven to be one of the better professional development activities that I have participated in for quite some time. Thank you for giving me much food for thought, both from the presenters and the participants. I give a standing ovation to the organizers of Mathweb 2000. I look forward to Mathweb 2001.</p>	Sharing experiences	11g-9
<p>14:10) 20-NOV-2000 00:57 larry hall (fun-pro) Didn't i hear that as our Christmas gift, Mathweb 2001, starts Jan 2, and will end Dec 30!!!  Congratulations for making it such an enjoyable and educational event. Hats off to all the excellent Sponsors and Contributors! Can't wait to review my CD!</p>	Sharing experiences	11g-7

Narrative	Analysis Categories	Code Line Count
larry hall ( <a href="mailto:Funpro@Webkormer.com">Funpro@Webkormer.com</a> )		
<p>14:11) 21-NOV-2000 17:52 Brooke Bertholet (brooke)</p> <p>From "overseas," I thank you all, very much, for the fantastic learning experience. This medium has provided me something which I have been yearning for professionally for years. My kids, the only point of reference, will benefit directly from this inter-change. Of that, I can assure you. Again, many hugs and kisses (a very Spanish sign of gratitude) to everyone. Let's keep the "international attitude," as recommended by the IB, to continuously help us modify and adjust our perspectives on how we deliver, facilitate, enhance, and promote mathematics education for the continuous enhancement of our immediate world and intellectual patrimony. With much gratitude...and, as always, to the NCTM as well.</p>	Sharing experiences	11g-16
<p>14:12) 22-NOV-2000 15:45 Carole Bilyk (cbilyk)</p> <p>I concur with the above comments. I would like to be involved in the next mathweb conference and my only regret is that this one was too short. I think a continuous conference would be great. (Or at least two or three of these conferences each year!) Happy holidays to all participants and especially to the organizers.</p>	Sharing experiences	11g-7

**Sharing experiences**  
**Student initiated discussion w/teacher**  
**Teacher initiated discussion w/student**

**11g-6**  
**11h-6**  
**11d-4**

## Appendix C

### References

## References

- Amidon, Edmund J. (1970), Interaction Analysis, in "Methods of Research in Communication," Eds, Emmert, Philip and Brooks, William D, Houghton Mifflin, Boston .
- Amidon, E. J. and Flanders, (1970) "10-category Interaction Analysis system P. 378.
- Advancing Communication Science: Merging Mass and Interpersonal Processes," Sage Annual Review of Communication Research: (1988) Editors Robert P. Hawkins, John M. Wiemann, and Suzanne Pingree.
- Armstrong, Jenny R. (1973). "A Sourcebook for the Evaluation of Instructional Materials and Media." Special Education Instructional Materials Center, University of Wisconsin, Madison, WI. ED 107 050.
- ASTD (1985). "Write Better Behavioral Objectives," American Society of Training and Development, Alexandria, VA.
- Baird, L. S., Beatty, R.W., & Schneier, C. E. (Eds.) (1982) "The Performance Appraisal Sourcebook." Amherst, MA.
- Bates, Anthony (1974). "Obstacles to the Effective Use of Communication Media in a Learning System." Keynote address to the International APLET Conference, Liverpool University. Paper No. 27.
- Bates, Anthony (1980). Towards a better theoretical framework for studying learning from educational television. "Instructional Science," 9, pp. 393-415,
- Bates, Anthony (1986, December). "Creating a Technologically Innovative Climate: The British Open University Experience." IET Paper #251.
- Bates, Anthony (1987, September). "Teaching, Media Choice and Cost-Effectiveness of Alternative Delivery Systems." Speech to the European Centre for the Development of Vocational Education, Berlin, September 3-4, 1987. Milton Keynes, Great Britain, Open University. IET Paper No. 264.
- Bergeson, John (1976). "Media in Instruction and Management Manual." Central Michigan University, Mt. Pleasant, MI, ED 126-916.
- Billings, Diane (1988). "A Conceptual Model of Correspondence Course Completion," American Journal of Distance Education, Vol. 2, #2, pp. 23 - 35
- Bloom, Benjamin S., et al. (1977). "A Taxonomy of Educational Objectives. Handbook I: The Cognitive Domain. New York, Longman.
- Brey, Ronald (1988, October). "Telecourse Utilization Survey: First Annual Report: 1986-87 Academic Year." Austin, TX. Annenberg/CPB Project and the Instructional Telecommunications Consortium .
- Brown, Bernice & Helmer, Olaf (1964, September). "Improving Reliability of Estimates Obtained from a Consensus of Experts," P-2986, Santa Monica, CA: Rand.
- Brown, Bernice (1968, September). "Delphi Process: A methodology Used for the Elicitation of Opinions of Experts," P-3925. Santa Monica, CA: Rand.
- Carnevale, Anthony; Gainer, Leila J.; and Meltzer, Ann S. (1990). "Workplace Basics," San Francisco, Jossey-Bass, pp. 37-65.
- Corporation for Public Broadcasting (1980). "Telecourses: Reflections '80 Executive Summary." Washington DC., Corporation for Public Broadcasting. p. 5.
- Dalkey, Norman C. (1969a, June). "The Delphi Method: An Experimental Study of Group Opinion," RM 5888-PR. Santa Monica. Rand.
- Dalkey, Norman C., Brown, Bernice, & Cochran, S. (1969b, November). "The Delphi Method, III: Use of Self-ratings to Improve Group Estimates," RM-6115-PR, Santa Monica: Rand.
- Dalkey, Norman C. & Brown, Bernice (1971, May). "Comparison of Group Judgment Techniques with Short-range Predictions and Almanac Questions," R-678-ARPA, Santa Monica: Rand .
- Dirr, Peter J. (1986, May 24). "Changing Higher Education Through Telecommunication," presentation for The World Congress on Education and Technology, pp. 1-2.
- Dunkin, M. J. & Biddle, B. J. (1974). "The Study of Teaching." New York: Holt Reinhart and Winston.
- Educational Products Information Exchange (1973). "Improving Materials Selection Procedures: A Basic How To" Handbook. "EPIE Report No. 54. New York.
- ELRA Group, Inc. (1986, August). "Executive summary: The Adoption and Utilization of Annenberg/CPB Project Telecourses," Washington, DC. Annenberg/CPB Project.
- Gagne, R. M. (1977). Analysis of objectives. In L. J. Briggs (Ed.) "Instructional design: Principles and applications. Englewood Cliffs, N.J., Educational Technologies Publications, Inc. pp. 115-145.
- Gardner, Howard (1985). "Frames of Mind," New York, Basic Books.

- Gardner, Howard (1991). "The Unschooled Mind," New York, Basic Books, pp. 11-12.
- Gueulette, David G. (1988, January). A better way to use television in our classes. "TechTrends." 33/1, pp. 27-29.
- Harasim, Linda (1987). "Computer-mediated cooperation in education: Group Learning Networks." Proceedings of the Second Guelph Symposium on Computer Conferencing, June 1-4, 1987.
- Harasim, Linda, Hiltz, Starr Roxanne, Teles, Mucio, and Turoff, Murray, (1997). Learning Networks, MIT Press, Cambridge, MA, 1997, pp. 19-34.
- Heidt, E. U. (1978). "Instructional Media and the Individual Learner: A Classification and Systems Appraisal." London, Kogan Page.
- Helmer, Olaf. (1966, December). "The Use of the Delphi Technique in Problems of Educational Innovations," P-3499, Santa Monica: Rand.
- Hezel, Richard T. (1987, November). "Statewide Planning for Telecommunications in Education; Executive Summary" Washington, DC, Annenberg/CPB Project.
- Hewitt, Louise Matthews, (1980). "An Administrator's Guide to Telecourses." Fountain Valley, CA, Coast Community College District. pp. 6-7.
- Hewitt, Louise Matthews, (ed.), (1982). "A Telecourse Sourcebook for the 80s." Fountain Valley, CA, Coast Community College District.
- Holt, Smith (1989, April). Speech at Learning by Satellite IV Conference, Tulsa, OK. San Ramon, CA. Applied Business teleCommunications.
- "Interpersonal Processes," Sage Annual Review of Communication Research: Editors Robert P. Hawkins, John M. Wiemann, and Suzanne Pingree. Page 110.
- Holmberg, B. (1986), Growth and Structure of Distance Education, London: Croom-Helm.
- Kalton, Graham (1983) "Introduction to Survey Sampling," Beverly Hills, Sage, p. 69.
- Kemp, J. E. (1985). "The Instructional Design Process." New York, Harper and Row.
- Knowles, Malcolm. (1970) "The Modern Practice of Adult Education," New York, New York. Associated Press.
- Knowles, Malcolm (1983). How the media can make it or bust it in education. "Media and Adult Learning," vol. 5, no. 2 Spring. In Gueulette, David G. ed. (1986) "Using technology in adult education." Glenview, IL. American Association for Adult and Continuing Education, Scott, Foresman/AAACE Adult Educator Series. pp. 4-5.
- Komoski, Kenneth (1977). Evaluating nonprint media. "Today's Education" 66:96-97 March-April.
- Kressel, Marilyn (1986). Higher education and telecommunications. "National Forum: The Phi Kappa Phi Journal Summer," Volume LXVI Number 3. pp. 4-6.
- Lane, Carla (1988). "Student Attrition in Distance Education Programs," Unpublished manuscript.
- Lane, Carla (1989a). "A Selection Model and Pre-Adoption Evaluation Instrument for Video Programs," American Journal of Distance Education, Vol. 3 No 3, 1989, pp. 46-57.
- Lane, Carla (1989b). "A Media Selection Model and Pre-Adoption Evaluation Instrument for Distance Education Media." Ann Arbor, UMI.
- Lane, Carla (1990). "The Use of Audio Interaction and Self-Directed Learning Contracts in a Telecourse Offered by Satellite: Foundations of Adult Basic Education. Proceedings, Midwest Research-to-Practice Conference in Adult, Continuing & Community Education.
- Lane, Carla (September, 1990). "Research Establishes National Teleconferencing Standards." San Ramon, CA. "Ed," pp. 10-12.
- Lane, Carla (1992). "Model Program: Interaction Through a Mix of Media," Proceedings, Global Trends in Distance Education, University of Maine at Augusta, September 24-26.
- Lewis, Raymond J. (1983). "Meeting Learners' Needs Through Telecommunications: A Directory and Guide to Programs." Washington, D.C.: American Association for Higher Education.
- Mager, R. F. (1975). "Preparing Instructional Objectives (second edition)," Belmont CA, Pitman Learning, Inc.
- Mayor, Mara and Dirr, Peter J. (1986). "Telelearning" in Higher Education. "National forum: The Phi Kappa Phi Journal," Summer, Volume LXVI No. 3. pp. 7-10.
- McDonald, F. J. & Elias, P. (1976). "Beginning teacher evaluation study: Phase II Final Report," Volume 1, Chapter 10. Princeton, NJ: Educational Testing Service.
- Meierhenry, W. C. (1981, Fall) Adult education and media and technology. "Media and adult learning." Vol. 4, no. 1. In Gueulette, David G. ed. (1986) "Using Technology in Adult Education." Glenview, IL. American Association for Adult and Continuing Education, Scott, Foresman/AAACE Adult Educator Series. pp. 2-3

- "Methods of Research in Communication." (1970) Eds, Emmert, Philip and Brooks, William D, Houghton Mifflin, Boston).
- Moore, Michael G. (1996), "Three Types of Interaction," The American Journal of distance Education, Pennsylvania State University 3 (2):1-7
- National Education Association (1976). "Instructional Materials: Selection for Purchase." Rev. ed, Washington DC, ED 130-380.
- Niemi, John (1971). The labyrinth of the media: Helping the adult educator find his way. "Mass Media and Adult Education." Englewood Cliffs, New Jersey: Educational Technology Publications, Inc., pp. 35-47.
- Phillips, G.M., G.M. Santoro, and S.A. Kuehn, (1988). "the use of Computer-Mediated Communication in Training Students in Group Problem-Solving and Decision-Making Techniques." The American Journal of Distance education 2(1):38-51
- Portway, Patrick, (1989, April 1). Speech at Learning by Satellite IV Conference, Tulsa, OK. San Ramon, CA. Applied Business teleCommunications.
- Reiser, Robert A. and Gagne, Robert M. (1983) "Selecting Media for Instruction," Englewood Cliffs, NJ, Educational Technology Publications.
- Sive, Mary Robinson. (1978 and 1983). "Selecting Instructional Media: A Guide to Audiovisual and Other Instructional Media Lists," 1st and 2nd editions, Littleton, CO. Libraries Unlimited, Inc.
- Stone, Harvey, (1991). "GTE Spacenet: Furthering education through telecommunications." San Ramon, CA, "Teleconference," Vol. 10, No. 6, p. 19.
- Tanzman, Jack and Dunn, Kenneth. (1971). "Using Instructional Media Effectively." West Nyack, NY Parker.
- Teague, Fred A. (1981) Evaluating Learning resources for adult. "Media and Adult Learning," vol. 4, no. 1, Fall . pp. 27-33. In Gueulette, David G. ed. (1986) "Using Technology in Adult Education." Glenview, IL. American Association for Adult and Continuing Education, Scott, Foresman/AAACE Adult Educator Series.
- Williams, Frederick; Rice, Ronald E.; and Rogers, Everett M. (1988) "Research Methods and the New Media," Macmillan, New York.
- Winkelmans, T. (1988). "Educational computer conferencing: An application of analysis methodologies to a structured small group activity." Unpublished master's thesis, University of Toronto.
- Zigerell, James J. (1986). "A Guide to Telecourses and Their Uses," Coast Community College District: Fountain Valley, CA., p. 35.