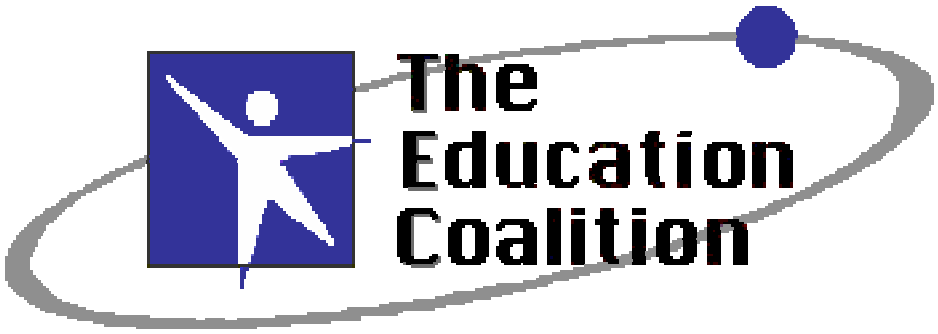

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Evaluation of Distance Education Telecourses

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Contents

Abstract

There has been increasing interest in the use of telecourses by post-secondary institutions in the United States; approximately 32 percent offered one or more telecourses during 1984-85. The literature does not show that telecourses are of equal quality. Since it likely that more video will be used, it must be used judiciously and correctly. To date, most educators have not learned how to use the media, and this has resulted in media not being used effectively as a learning resource. Telecourses are now being selected by inexperienced personnel without benefit of using appropriate media selection evaluation procedures because an evaluation model or evaluation instrument does not exist. As a form of media, distance learning materials have an equal need for effective evaluation. Evaluation is critical to ensure that quality materials are selected which meet course objectives.

The purpose of this study was to clarify the criteria for a distance education media selection model and an evaluating instrument which would require evaluators who use it to apply specific evaluating criteria to the media to determine the suitability of its use.

The model and the evaluating instrument are based on evaluative criteria which consider the interaction of a combination of media and factors related to the instructional program, video programs, and the learner. The instrument asks for specific conclusions and is short enough to be of practical use. The evaluating criteria are applied to nine areas; educational objectives, instructional design, content, textbook, faculty guide, student study guide, computer software, video, and cost.

Chapter I

Introduction to the Problem

Distance Education

A major movement in higher education in the United States today is the use of telecommunications technologies to teach students at a distance from the campus. The telecourse which has evolved to serve this student is composed of video programming which varies from two to 48 hours (Brey, 1988) and replaces the traditional classroom lecture. The video program is augmented by textbooks, study guides, anthologies, audio tapes, computer programs, and other instructional material required by course content. Instructors are generally assigned to a course and may require other meetings with the students including laboratories and seminars which may be conducted in traditional ways or by audio, video, or computer teleconference (Zigerell, 1986). Delivery technologies for the video program include broadcast television, cable, satellite, fiber optic cable, computers, and videodisc (Zigerell, 1986). Audio portions may be delivered by cassette and radio (Zigerell, 1986). Through these technologies post-secondary institutions reach learners who are unable to attend campus classes due to distance, time, or disability constraints, and make education accessible (Mayor and Dirr, 1986).

The establishment and acceptance of the validity and effectiveness of telecourses, together with the production of more and better telecourses, will increase student demand and institutional interest in offering them. The ability of educational institutions to reach more students, wide though it already is, will be multiplied almost beyond imagination by the proliferation of relay technologies, the growth in regional and national consortia, and digital fusion, the technical marriage of computers to television (Hewitt, 1982; Portway, 1989).

We are experiencing dramatic shifts in education, notably a move toward lifelong learning as a result of the need to retrain individuals whose skills are no longer marketable (Eurich, 1985). Adult students now constitute 83 percent, or 10 million of the nation's 12 million college students (U.S. Department of Education,1987). The stereotypical 18-22 year-old, full time, residential college

student is greatly in the minority at 17 percent (2 million) of this population. In 1970 older students constituted only 28 percent. This is in line with Annenberg (Brey & Grigsby, 1984) studies which report that 75 percent of telecourse students are over 22 years of age. United States institutions primarily use distance education to reach the same adult audience that is returning to the campus to complete coursework (Daniel, et al., 1982; Frankel & Gerald, 1982; Lewis, 1983). The adult population increase indicates a continued growth in the demand for distance higher education as it better meets the the needs of adults (Mayor & Dirr, 1986).

Institutions are confronted with the need to deliver more educational activities despite shrinking resources and the increasing cost of delivering services with traditional methods (Meierhenry, 1981). Forrer (1986) predicts that economic considerations will continue to act as a force on post-secondary institutions to find ways to use telecommunications. The Carnegie Commission (Eurich, 1985) and Luskin (Nolan, 1984) state that if higher education does not integrate telecourses, the private sector will. The issue is who will seize and make the most of the opportunity (Nolan, 1984; Bowsher, 1989). Galagan (1989) and Bowsher (1989) liken this to the situation in industry where economic considerations forced companies to cut training costs and utilize distance education techniques. Designing courses with advanced technology is more cost effective than traditional courses. Telecourses are an economically feasible way for post secondary institutions to confront shrinking resources and the increased cost of delivery of educational services by traditional methods (Meierhenry, 1981; Bowsher, 1989). Today's emphasis on cost effectiveness and accountability of instructional programs necessitates that media selection be considered a critical issue (Reiser & Gagne, 1983).

Meierhenry (1981) states that media and technology can provide the packaging and delivery of educational programs while Moore and Shannon (1982) state that video has become so pervasive that it may prove to be the only significant method of mass approach. Gubser (1985), Reider (1985), and Ladd (1989) indicate that increasingly, video cassette recorders (VCR), cable and satellite dishes will be used to serve education. Knowles (1983), Galagan (1989) and Bowsher (1989) conclude that by the end of the 1990s most education will be delivered electronically. Bates

(1975a) feels that tapes loaned to students has a decided advantage over cable because of the control characteristics.

Adult educators (Moore & Shannon, 1982) reported that their interest in video was due to programming availability, video's ability to expand the service area, reusable videotapes, and its being less expensive than traditional classes. In 1989, 66 percent of American homes had at least one VCR and industry projections forecast 90 percent by the late 1990s (Ladd, 1989).

Fiber optic cable installed in homes will vastly expand phone company services to include information, video, education, and other developments we cannot even imagine according to Flanigan (1989) and Vehige (1989). Nynex and Southwestern Bell Telephone Companies predict that video transmission to homes is the big promise of the next two decades and that America's phone companies are already deeply involved (Flanigan, 1989; Vehige, 1989). Flanigan (1989) predicts that fiber optic cables will be the industrial highways of the information age and observes that Japan's government and industry has already committed $240 billion to install fiber networks. Brey's (1988) study showed that broadcast television is the most important delivery system but video tape and cable will soon overtake it.

There is little variance of opinion about the value of coordinated telecommunications planning. Hezel's (1987) study showed that most distance educators recognize economies of scale in the development and installation of services for multiple institutions. Even though the use is extensive there is a growing feeling that telecommunication is not being used to its full capacity (Bates, 1974; Hewitt, 1982; Ladd, 1989; Curtis; 1989). As a result, educators have strong inclinations to develop uniform systems which can equitably provide education to dispersed populations (Hezel, 1987; Ladd, 1989).

Portway (1989) refers to the technological concept of digital fusion which involves merging telecommunication technologies through computer control and the ability of laymen to use them more easily. The components are integrated service digital network (ISDN) telephone service; fiber optic cable in homes and offices to deliver audio, data, and video entertainment or educational programs; computer desktop video to produce programming; and high definition television (HDTV)

which is digitized video. Through merged technologies, video, audio, and data can be delivered by fiber optic cable to the computer, stored on disc, and utilized to produce educational programming.

Since it is most likely that more video will be used, it must be used judiciously and correctly (Gueulette, 1988). To date, most educators have not learned how to use the media, and this has resulted in media not being used effectively as a learning resource (Knowles, 1983). Bates (1974) maintains that educational media are generally underused and when they are used, they are not used effectively. Bates continues that we do not know enough about media and how to use them in an educational context; educators are ignorant, and worse, very often, are afraid to admit it (1974). Historically and currently, there is little emphasis on how to plan, prepare, and utilize media in education (Meierhenry, 1981). If the use of media and technology is to increase, educators must learn how to reach educational goals and objectives through the various media (Meierhenry, 1981).

The use of telecourses has increased and hundreds of telecourses augmented by print materials now exist and are offered for graduate and undergraduate credit (Brey, 1988). Of the 3,000 United States colleges and universities, user institutions increased from 25 percent in 1978 (Dirr & Katz, 1981) to 32 percent in 1986 (Dirr, 1986). A total of 902 (32 percent) colleges and universities offered one or more telecourses during 1984-85 (Riccobono, 1986); 10,594 telecourses, an average of 12 per institution, were offered to 399,212 students (Riccobono, 1986). Courses are produced by at least 56 institutions and video production houses (Brey, 1988; Curtis, 1989) and are offered in departments which range from business to computer science (Brey, 1988). Faculty in these areas seldom have media expertise (Holt, 1989; Portway, 1989). In most content areas, several telecourses are available (Brey, 1988) so that adopters should evaluate programs before selection (Zigerell, 1986). Brey (1988) is following 200 institutions which offered 183 telecourses 1,764 times during 1986-87; he reports that 124 telecourses were offered once, but five were offered 100 times. Course lengths vary from two to 48 hours with 49 percent averaging 13 hours (Brey, 1988). It is predicted that more telecourses will be produced and delivered electronically (Meierhenry, 1981; Moore & Shannon, 1982; Knowles, 1983; Bates, 1987b).

The Corporation for Public Broadcasting (1980) observed that colleges have two major decision points in telecourses: (1) the initial decision to use telecourses as a form of education; and (2) the decision to offer a particular telecourse. In many cases the initial decision to use telecourses "just happens," often because of the interest of one person (1980, p. 5). Decisions on specific telecourse adoptions are usually based on an examination of telecourse availability, quality, perceived needs, potential enrollments, and costs (1980).

Since the mid-1970s, improvement has been made in telecourses but the concept and use of telecourses is still evolving; all of the problems have not been solved (Hewitt, 1982). In the face of growing trends in electronic education institutions will expect quality telecourses, however, the literature does not show that telecourses are of equal quality. There has been an ongoing demand for quality since telecourses appeared. In 1952, Newsom stated that programming must be first-rate or instructional television will fail. Eash (1972) evaluated 1960s materials and notes that he became painfully aware of the shortcomings of many glossy, highly advertised materials. Evaluation is important because of the lack of quality programming (Berkman, 1976) unfavorable student attitudes, and thus the success of the learning experience (Berkman,1976; Curtis, 1989). Bates (1974) contends that the wrong criteria are applied to judge the value of a program.

In 1984, the Center for Learning and Telecommunications reviewed over 900 telecourses for possible inclusion in their Telecourse Inventory (1984). Out of the 900 submissions, they were able to recommend only 139. Their evaluation method is not available as the Center lost its funding and former employees could not provide a copy (C. Lane, personal communication with Peter Dirr, September, 1986). The 1985 Annenberg study (Lewis, 1985) showed that faculty valued technology's potential but were highly critical of the quality of most video and computer software. Kressel (1986) notes that the quality and evaluation of telecourses continues to plague educators and policy makers; material is being "cranked out" (pp. 4-6) everywhere from obscure garage-top attics to high-tech production facilities. While the problems are apparent, the solutions are not according to Kressel. She urges a forum to disseminate effective media selection models and a debate over quality criteria and evaluation methods. Kressel asks if the issues of educational quality

will be addressed so that distance education will thrive? She warns that without evaluation and quality control, distance education will fail; failure is preventable if good practice is ensured by dissemination of effective models, quality criteria, evaluation methods, and assistance to state planners.

Problems which have been overlooked in the evaluation process have led to the overuse of inconsequential telecourses and their misuse (Gueulette, 1986). Brey (1988) reports that the same telecourses are used in multiple departments; in 1986-87 "The Business File" and "The New Literacy" were used by 16 and 10 different departments respectively. Teachers often fail to plan the use of video and effective ways to support instructional objectives with video (Gueulette, 1988).

Since the decision to adopt the telecourse usually rests with administrators and faculty (Zigerell, 1986; Brey, 1988) who are unlikely to have media expertise, there is a need to train them in media selection and utilization (Jones, 1965; Unwin, 1969; Tanzman & Dunn, 1971; Kemp, 1975; Heidt, 1978; Meierhenry, 1981; Knowles, 1983; Lewis, 1985; Kressel, 1986; Mayor & Dirr, 1986; Hezel,1987; Holt, 1989; Portway, 1989).

Telecourses are now being selected without benefit of using appropriate media selection evaluation procedures (Bates, 1974; Kressel, 1986) because an evaluation instrument does not exist (Teague, 1981). Because the telecourse evaluation is not properly conducted, the decision to adopt the telecourse is not grounded in media selection methods. As a result telecourses may be adopted from which optimal learning by the student does not occur (Knowles, 1983; Niemi, 1971) because the telecourse is ineffective in its instructional design, inappropriate for the learners, or does not fulfill objectives (Meierhenry, 1981). It is probable that the result is a great deal of unplanned, and very likely, ineffective instruction (Gueulette, 1988).

Teague (1981) feels that it is imperative that the evaluation of learning resources be approached with the same high degree of professionalism that should characterize every aspect of planning and implementing instructional programs. Evaluation of learning resources involves making judgments about their educational worth (Teague, 1981). Bates (1974) argues that institutions should define overall objectives for integrated media at a program level including how programs affect students and how students can easily integrate programs into their mode of

learning. The evaluation process requires a well-developed measuring and evaluative instrument to: 1) guide adopters through the process; 2) focus on the same evaluation questions; and 3) lead evaluators to a sound judgment so that decisions are appropriate (Teague, 1981).

Improved media selection procedures can change the current situation (Sive, 1978, 1983; Niemi, 1971; Teague, 1981). An adoption process which includes an evaluation instrument for telecourses based on media selection methods would ensure that adoption personnel evaluate telecourses using the best available media selection methods to help ensure the selection of resources that will make genuine contributions to student learning (Teague, 1981). Such an evaluation instrument would guide them in developing personal media selection skills. The literature does not provide an empirically based evaluation instrument which facilitates the adoption process (Reiser & Gagne, 1983; Kressel, 1986). Knowles (1983) and Hewitt (1982) maintain that we are just beginning to learn how to use media for educational purposes.

The 1979 Carnegie Commission report concluded that "It is clear that with careful planning, skillful execution, and thorough evaluation, telecommunications will play an increasingly fundamental role in the learning processes of Americans of all ages" (p. 273).

History of Telecourses

American Experience. Distance education is often viewed as a recent development when in fact, correspondence courses were established in the 1870s (Beaudoin, 1985). By 1882, the University of Chicago had established a home study division. In 1915 the National University Extension Association established a Correspondence Study Division and in 1926, the National Home Study Council was established. Over 55 million students have studied at home.

Efforts to produce educational materials for television broadcast are almost as old as the medium, but early efforts bear little resemblance to the soundly designed, sophisticated telecourses available to today's students (Hewitt, 1980; Beaudoin, 1985).

In the 1950s the first educational television programs were created for open broadcast (Hewitt, 1980). In 1951, the City Colleges of Chicago pioneered the first large-scale instructional television

programs for credit by organizing an institution through which students could obtain a degree by taking only television courses (Hewitt, 1980; 1982). It has served over 200,000 students.

In 1947, the Truman Commission articulated a strong position on universal education; this action was followed by even stronger pronouncements by the Eisenhower Commission. In 1952 when the Federal Communications Commission (FCC) assigned frequencies to establish public broadcasting, one of the objectives was the provision for instructional television (Hewitt, 1982).

Following an early and fairly enthusiastic acceptance of educational television in the early 1950s, more producers entered the field and used a variety of methods to teach via television. As there were more failures than successes, disenchantment followed in the 1960s as it became apparent that television could not solve all of education's problems (Hewitt, 1982). Early programs tended to use the medium as an electronic blackboard for elementary and secondary teachers, and televised lectures at the college level. Educators regarded television as an extension of the classroom, not as a medium with its own enormous advantages and capacities. The capacities and strengths of the medium were not recognized for a long time and early efforts to teach by television were largely disappointing (Schramm, 1967). Yet the telecourse evolved from these blackboard and talking-head approaches as well as from the older independent study models long familiar to higher education, and recognition of television's unique potential came with this evolution.

Crow (1977) recognized and criticized the failure of educators to use the medium to its best advantage, noting that taking pictures of a talking head or what is done in a regular classroom and televising that was not using it for the unique medium that it is. He believed that television must involve careful design, scripting, and production that provide a high quality that could never be replicated in a regular classroom presentation (Crow, 1977).

Use of the community cable television (CCTV) facility to prepare telecourses was one of television's potentials. A CCTV system enabled an institution to tailor its telecourse to fit the local needs. Videotape and kinescope made packaging and storing educational programs possible. The University of Denver reported programming telecourses in accounting and zoology. At Iowa State University, sixteen classrooms in a new building were equipped with two receivers each to

receive taped programs. The University of Akron (Ohio) used CCTV to telecast seven required courses and students had no alternative as CCTV was the only way the course could be taken (Stephens, 1962). In 1960, the University of Missouri presented 27 taped television courses; 19 were presented on the University CCTV channel and the others were split between CCTV and broadcast stations including four on St. Louis' PBS station KETC-TV. Institutions continued to perceive television as a partial solution to burgeoning enrollments and instructor shortage (Stephens, 1962).

During the 1970s and 1980s, there was a renewed acceptance of educational television based on an understanding of the medium's potential, strengths and limitations, and an increasing sophistication in the development of a system of learning elements which were integrated to reinforce mutually the learning experience (Hewitt, 1982). In the 1970s several new United States organizations began to produce and offer telecourses. In 1970 the Maryland Center for Public Broadcasting and the Southern California Consortium for Community College Television produced and offered telecourses regionally and nationally. The Consortium makes college credit telecourses available to its member colleges and usually has three or more new telecourses in development (Hewitt, 1980). In 1972 three community college districts began producing and offering telecourses; Miami-Dade Community College District in Florida, Coast Community College District in Costa Mesa, California, and Dallas County Community College District (Hewitt, 1980).

Since the early 1970s numerous organizations have produced and offered telecourses. Chief among these was the now defunct University of Mid-America, a consortium that consisted of nine state universities. Telecourses produced by this group are now available through the Great Plains Network (GPN) (Hewitt, 1980).

In its 1979 report on the future of public broadcasting, the Carnegie Commission stated, "television and radio have great unused potential for learning, and new technologies are on the verge of greatly enhancing this potential. We believe it is time to launch new efforts to tap the power of broadcasting and the new telecommunications media for learning" (Carnegie, 1979, pp. 255-256). The report concluded that, "It is clear that with careful planning, skillful execution, and

thorough evaluation, telecommunication will play an increasingly fundamental role in the learning processes of Americans of all ages" (p. 273).

The rush of institutions and their students to take advantage of instructional television began suddenly toward the end of the 1970s and accelerated rapidly thereafter (Hewitt, 1982). Purdy (1980) and Grossman (1982) refer to the revolutionary nature of the swift increase and the extent to which telecourses are being used in the 1980s. Likely catalysts for this increase were the refinement and sophistication of telecourses and the technological means to deliver them (Munshi, 1980). These concurrent events have had strong impact, spawning several other developments of national significance. These include: establishment of the PBS Adult Learning Service - a public programming service which is devoted to national delivery of educational programs; the Annenberg/CPB Project, a $150 million fund to encourage the development of innovative television and radio courses; establishment of the National University Consortium and the University of Mid-America; organization of large and small consortia representing hundreds of institutions which share production and licensing costs; and the emergence of several multi-campus community colleges as leaders in the production and use of telecourses (Munshi, 1980).

Since the mid-1970s, immense improvement has been made in telecourses through application of sound principles of academic design and the participation of professionals in the fields of television, writing, editing, and publishing (Hewitt, 1982). Both the concept of the telecourse and the use of telecourses are still changing and evolving, and it would be incorrect to suggest that all the problems of this form of education have been solved (Hewitt, 1982). There is still room for improvement in the quality of telecourses (Hewitt, 1982).

When ordinary broadcast delivery or closed-circuit channel is not possible, telecourses are being relayed by cable, satellite, telephone, videotape, and videodisc to hundreds of adult learners who probably never could -- or would -- attend courses offered on campus (Hewitt, 1982). The use of television in higher education today is widespread and growing. Establishment of the Annenberg/CPB Project continues to stimulate the production of superior courseware (Hewitt,

1982; Dirr, 1986) and the growing number of consortia, task forces, and commissions will encourage and expand the use and production of telecourses (Hewitt, 1982).

The Public Broadcasting Service has identified adult learning as one of its primary objectives. Colleges, universities and public broadcasting stations are working together to make education available to individuals who would not have this opportunity without the intervention of telecommunications. As cable becomes more available and new technologies offer additional avenues, more opportunities will become possible (Hewitt, 1982).

British Experience. A major advance in instructional television and telecourses was made by the establishment in 1969 of the British-Open University. It was designed to offer students non-traditional opportunities for education and placed particular emphasis on instruction by television. Probably no institution has had such a dramatic impact on the use of television in higher education as has the Open University of Great Britain (Hewitt, 1982). Perry (1977) writes that the Open University evolved from the convergence of three major educational trends: adult education, educational broadcasting, and the spread of educational egalitarianism. In the United States, the success of the Open University rekindled interest in the use of educational television (Hewitt, 1982). The Open University enrolled its first students in 1971 and continues to enroll about 40,000 students each year, many of whom earn regular degrees. Some telecourses produced by the Open University are used by American institutions (Hewitt, 1980). Several dozen distance learning institutions now exist in many countries around the world.

The Open University sees satellites as an important development in the next few years to make telecourses available and to extend its work with industry and commerce in the field of professional and technological training.

The end point of what can be done when television is combined with other media for education has not been reached; rather, this is probably just the beginning of a revolution in education which will involve many forms of telecommunications (Hewitt, 1982).

Statement of the Problem

Context

Post-secondary institutions offer telecourses with video delivered by broadcast television, cable, satellite, fiber optics, videodisc and learning centers and augmented by textbooks, study guides, audio, computers, laboratories, and seminars. Telecourses are available locally, regionally, nationally, and internationally (Zigerell, 1986). This study focuses on telecourses augmented by print materials which are offered for credit through any delivery method.

Problem

Educational literature is flooded with instruments which have been developed for use in evaluating learning resources and instructional materials (Teague, 1981). There is agreement in the literature that media should be evaluated; however there is little agreement on what constitutes good evaluation (Tanzman & Dunn, 1971; Armstrong, 1973; Educational Products Information Exchange {EPIE}, 1973; Bates, 1974; National Education Association {NEA}, 1976; Bergeson, 1976; Anderson, 1976; Komoski, 1977; Sive, 1978; Hewitt, 1980, 1982; Kressel, 1986; Mayor & Dirr, 1986). Many forms have been designed for local applications (Teague, 1981). Bates (1974) contends that the wrong criteria have been applied to judge the value of a program.

Knowles (1983) states that two models have been followed; the pedagogical model of learning and the entertainment model of media use. As a result, the media have not been used effectively as resources for learning and there is less than optimal learning. He suggests following the andragogical model of learning and the educational model of media use. The features are interaction; task centeredness organized around the acquisition of the knowledge that is applicable to performing life tasks; individualization which takes into account learner differences in backgrounds, readiness to learn, motivation to learn, learning styles, developmental stages, and learning pace; and self directedness as adults have a need to take responsibility for their lives so that media which involve learners in making decisions about what they are going to learn, how they are going to learn it, when they are going to learn it, and how they are going to verify that they have learned it will be more effective than those in which all these decisions are made for the learners.

Clear telecourse evaluation procedures do not exist in the literature (Bates, 1974; Kressel, 1986; Holt, & Portway, C. Lane interview, April 1, 1989). A critical analysis of what is effective when delivered by technology is unavailable according to Kressel (1986) and Bates (1987b). Distance educators could not recommend and are not using a telecourse evaluation procedure (Kressel, 1986; Holt, 1989; Portway, 1989). Bates (1987b) contends that what is needed is a strategy for decision making in this area.

Telecourse adoption personnel are composed of instructors and others who may not have media selection skills (Jones, 1965; Unwin, 1969; Tanzman & Dunn, 1971; Kemp, 1975; Heidt, 1978; Meierhenry, 1981; Knowles, 1983; Lewis, 1985; Kressel, 1986; Mayor & Dirr, 1986; Bates, 1987b; Holt, 1989; Portway, 1989). There is a need to help faculty master and utilize new resources and techniques (Mayor & Dirr, 1986; Kressel, 1986; Bates, 1987b; Holt, 1989; Portway, 1989).

As a result of these factors, telecourse adoption is not grounded in empirically based methodology (Bates, 1974; Kressel, 1986; Reiser & Gagne, 1983; Teague, 1981; Holt, 1989; Portway, 1989). Kressel asks, "What is a credit-worthy telecourse vs. slick television?" and "What is sound education vs. entertainment? (p. 6, 1986)." She concludes that there is no evaluation procedure to use which ensures that students will learn from the telecourse and thus no current answer to the question, "Is it sound education worthy of credit?" The wrong criteria have been applied to judge the value of a program (Bates, 1974).

As the cited literature suggests, the message that an evaluation method should be established has been regularly repeated since the inception of the telecourse. With over 300 telecourses (Brey, 1988) and 350,000 pieces of instructional media available, choosing suitable material is a problem (Bernard, 1974; Sive, 1978, 1983; Holt, 1989; Portway, 1989). Even the most basic information regarding evaluation on costs, output or any way to judge effectiveness is lacking (Bates, 1974).

Most telecourse material is not reviewed or rated for its suitability. Generally, audio-visual guides give a brief description of the material, the general topic, content, grade level, producer and cost for

rental. Telecourse reviews receive significantly less space than educational computer programs and only a fraction of non-book media reviews (Sive, 1978, 1983).

A review of the literature on guidelines for elementary through post-secondary instructors to select media did not provide a method (Teague, 1981). The literature shows that there is a need to help instructors select media (Mayor & Dirr, 1986; Kressel, 1986; Holt, 1989; Portway, 1989). Sive (1978, 1983) notes the absence of methods to select media which exist for books. The method most used for adoption is for an administrator to identify telecourses by contacting producers; preview materials are given to the selection committee who make the decision to adopt the telecourse and to adopt, reject, modify, select or produce print materials (Zigerell, 1986).

Teague (1981) suggests that an evaluation instrument should reflect specific criteria and force the evaluator to apply the criteria to the resources. Teague performed an analysis of evaluation forms and concluded that several factors tend to limit their effective post-secondary use (1981). Most forms: 1) are for use with elementary and secondary materials; 2) evaluate one medium; 3) ask for general conclusions; 4) include no reference to evaluative criteria; 5) ask for excessive amounts of non-evaluative information; and 6) are too detailed and lengthy (Teague, 1981).

Purpose of the Study

It is the purpose of this study to create a media selection model for distance education telecourses and a model based evaluation instrument to be used by post-secondary personnel involved in telecourse adoption.

Method - the Delphi Technique

The Delphi technique was used to develop the telecourse evaluation instrument. The Delphi technique was chosen as it is a systematic method for eliciting expert opinion (Sackman, 1974). The Delphi technique is a set of procedures for the systematic solicitation and collation of expert opinions.The Delphi technique was used to formulate a group judgment for subject matter where precise information was lacking to identify problems, define and clarify issues, establish priorities, and identify and evaluate solutions. The basis for the method rests on the assumption that expert

opinion exists and that many experts are better than one (Harman, 1975). It tends to build group consensus because respondents are called upon to re-examine their positions several times (Borg & Gall, 1983). It is applicable whenever policies and plans have to be based on informed judgment during the decision-making process (Helmer, 1966). The method can be applied to all phases of educational planning (Helmer, 1966). The consensus intent of Delphi is oriented toward a controlled and rational exchange of iterated opinion leading toward optimal convergence of opinion achievable within the framework of the technique (Helmer, 1986). Delphi proponents stress three attributes which contribute to authentic consensus and valid results; respondent anonymity, statistical response, and iterative polling with feedback (Dalkey, 1969a).

Experiments have demonstrated that for subject matters where the best available information is the judgment of knowledgeable individuals, a systematic and controlled process of querying and aggregating the judgments has distinct advantages over the traditional group discussion or small expert panel (Dalkey, 1969, 1971). Dalkey (1971b) found that the larger the group, the more accurate the answer on the average and the greater the answer's reliability so that there was a higher probability that a similar group would express a similar answer.

Formulation of the problem was accomplished through the questionnaire design which was based upon the literature review, and its experimental implementation. Solution testing included iterative field administration and analysis of scores. The last stage involved the interpretation of results in communicating findings to others (Sackman, 1974). Because Delphi aids in the clarification of issues, the final result is likely to reflect more careful thought and consensus than would be obtained from a single questionnaire. This is desirable for implementation (Dalkey, 1969a; Sackman; 1974).

The questionnaire was mailed to 400 distance education professionals who were involved with telecourses in some capacity. Included were personnel at approximately 200 United States post-secondary institutions which offer telecourses for credit, 24 consortia, and 50 telecourse producers (Brey, 1988). New users were included to assure that basic questions would be a part of the final instrument. Respondents were anonymous.

A modified two-round Delphi technique was used as Dalkey (1971b) and Martino (1972) found very little movement to consensus in the answers to the third and fourth rounds and suggest that they are not necessary. Respondents were asked to identify the importance of each statement on ranked scales for self-knowledge and importance and to add items which they felt were important. The first round rankings and the median scores for each statement were computed.

Based upon responses to the first round and a consensus level of 50 percent for respondents importance ratings for a statement, a second revised questionnaire was written and sent to the respondents with feedback listing the median scores, comments, and subsidiary statements. The respondents were asked to compare their first round ratings with the median score and to revise their first round evaluations. They were asked to defend or criticize statements and comments. Based upon an 80 percent consensus of the expert subgroup respondents to both rounds, the final instrument was written and a post-test conducted with a panel of six judges before the final instrument was sent to respondents for their use.

Definition of Terms

The term "distance education" refers to teaching and learning situations in which the instructor and the learner(s) are geographically separated, and therefore, rely on electronic devices and print materials for instructional delivery (Keegan, 1983; Holmberg, 1981; Sewert, 1982). Distance education includes distance teaching - the instructor's role in the process; and distance learning - the student's role in the process (Keegan 1982, 1983). This study will operate under this definition.

Significance of the Study

The significance of the study is based upon the contributions it will make to the theoretical base of distance education through the creation of a telecourse media selection model and the practical application of that model through a telecourse evaluation instrument. There is no existing empirically based media selection model or evaluation instrument to aid in the selection of telecourses that details the educational criteria which telecourses should meet; the absence of a model or an evaluation instrument prevents distance educators from determining systematically if a telecourse meets educational objectives. Bates (1980) states that the impact of television must be

seen as depending on a combination of media (1987) and factors related to the general organization of the instructional program, factors relating to the video programs, and factors related to the learner (1980). There is a need for a decision making strategy in this area (Bates,1987b). This study will clarify the elements of a suitable model and develop an instrument for evaluation based upon the model.

The field of distance education continues to develop and economic considerations will force colleges and universities to use telecommunications for instructional delivery (Meierhenry, 1981; Forrer, 1986; Bowsher, 1989). It is predicted that more telecourses will be produced and more will be delivered electronically in the future (Meierhenry, 1981; Moore & Shannon, 1982; Knowles, 1983; Bates 1987b). Because of these user trends, it is imperative that we use the electronic media judiciously and correctly (Gueulette, 1988). In the face of growing trends in the delivery of education through electronic media, institutions will expect a quality educational product. Currently, no acceptable media selection model or evaluation instrument exists which meets the needs of experienced or inexperienced telecourse adaptors (Mayor & Dirr, 1986; Kressel, 1986; Bates, 1987b; Holt, 1989; Portway, 1989).

Evaluations are not currently being conducted by experienced personnel with media selection expertise using a model or evaluation instrument which will select the best available telecourse. An Annenberg/CPB Project (ELRA, 1986) study showed that the adoption process was most often initiated by a consortium representative who may not have media expertise; administrators or department chairs review the course materials 80 percent of the time and faculty members review the materials in 55 percent of the cases. The study showed that the prime criteria for telecourse adoption was the ability of the telecourse to attract new students; this suggests that the ability to generate tuition income was more important than educational outcomes, however, the study did not clarify the reason. The second and third criteria were respectively, course content quality (a method to evaluate quality was not reported), and the ability to provide new resources or new approaches.

Chu and Schramm (1967) stated that the effectiveness of television had been demonstrated in well over 100 experiments and that adults learn a great amount from instructional television. In

1977, after reviewing over 300 studies, Schramm again concluded that there was no significant difference between learning in classrooms and from television; this was again validated by Johnston (1987). Levine (1987) argues that the general conclusion to draw from these studies is that learning from television-delivered instruction is equivalent to traditional, classroom-based instruction learning; so that there are "good and bad television courses as there are good and bad campus-based courses" (p.16). The question is, on what basis should one separate good and bad telecourses?

Bates (1974) observes that this type of research proves nothing and has been totally useless. He believes that the weakness in this research has been that the variables of content taught and styles of teaching have not been controlled; as a result, differences cannot be attributed to one medium over another. The main weakness of comparative studies is that they do not help producers or teachers to improve the product since they do not tell what is wrong or what can be done about it (Bates, 1974).

Existing Media Selection Models

In six states (Kansas, Missouri, Oklahoma, Texas, Washington, and West Virginia), legislation has been developed to specify the kind of telecourse evaluation to be done and the criteria to meet for telecourses and their delivery systems (Kressel, 1986). The fact that states are mandating evaluation procedures underscores the fact that a media selection model and evaluation instrument is needed and that distance educators have not provided the leadership (Holt, 1989.) Holt (1989) warns against seeking government entitlement programs to fund the production of distance education telecourses and believes that it should remain entrepreneurial to force bankruptcy on the producer of deficient programming. He strongly feels that the administrative, faculty and student consumers must judge quality. Holt's message is that both the buyer and seller should beware. Holt demands a partnership between producers and consumers that amounts to unreserved commitment to distance education as most failures occur because student support systems are not in place (Holt, 1989). Holt predicts that state controlled accreditation will be established for political reasons rather than for the quality control which he endorses. He predicts that state accreditation is

here to stay since more credit programming is being brought in by satellite from other states. Holt warns that for accountability, state education personnel should be used in a guidance role, but distance educators should perform the evaluation.

Kressel (1986) notes that the quality and evaluation of technology-based instruction continues to plague educators; material is being produced everywhere from garage-top attics to high-tech production facilities. While the problems are apparent, the solutions are not, according to Kressel (1986). She urges a forum to disseminate effective media selection models and an enhanced debate over quality criteria and evaluation methods. Bernard (1974) notes that the problems of evaluation procedures and results are both massive and complex; traumatic experiences make it clear that these are not abating.

This study is designed to use the Delphi technique (Sackman, 1974) to focus consensus among distance educators and thereby develop an empirically based and usable media selection model and evaluation instrument. Future use of the model and its derived instrument by experienced and inexperienced evaluators should ensure that important educational factors are considered and that the same criteria are used by all evaluation committee members (Teague, 1981; Holt, 1989; Portway, 1989). The instrument could also be used to train inexperienced and experienced personnel in media selection methods (Holt, 1989; Portway, 1989).

The purpose of any educational evaluation is to determine the extent to which educational objectives are achieved by an institution, department, course, instructor or student. For telecourses, the printed and electronic media carry the message. For this reason, the materials selected must represent the institution and satisfy the educational goals of all participants.

Reiser and Gagne state that in order to make instruction minimally effective, selection of media has become a "burning" question (1983, p. 3). They conclude that for a given instructional task and learners, various media will differ in instructional effectiveness (1983). Emphasis on effectiveness and cost effectiveness, as well as accountability of instructional programs, necessitates that media selection be considered a critical issue (Reiser & Gagne,1983; Bowsher, 1989). Reiser and Gagne (1983) assert that much instruction is not planned to ensure effectiveness.

Reiser and Gagne (1983) point out that there is no generally accepted media selection model even though much has been written about instructional media. Sive (1983) points out that few media books list "selection" in the index. Schramm (1977) observes that no procedure can be applied automatically in every instructional situation and guidelines should consider local needs, situations and resources. Clark and Angert (1981) conclude that available models reflect a preoccupation with technical considerations such as the convenience and portability and lack substantial instructional design considerations.

Reiser and Gagne (1982) reviewed nine media selection models which attempt to answer how educators should go about selecting media (Anderson 1976; Branson, Rayner, Cox, Furman, King and Hannum, 1975; Bretz, 1971; Briggs & Wager, 1981; Gagne & Briggs, 1979; Gropper, 1976; Kemp, 1980; Romiszowski, 1974; and Tosti & Ball, 1969). Reiser and Gagne (1983) concluded that information concerning the usefulness of existing models was limited due to the rarity of finding detailed information about situations in which selection models were employed and that there was limited empirical evidence about the relative merits of media selection models. Their conclusion was that choosing a media selection model is not simple.

The literature clearly states that it is vital that media selection criteria cover educational objectives, instructional design, student study guide, computer software, video production, content, textbook, faculty guide, and cost. There is agreement in the literature that media should be evaluated; however there is little agreement on what constitutes good telecourse evaluation (Tanzman & Dunn, 1971; Armstrong, 1973; EPIE, 1973; NEA, 1976; Bergeson, 1976; Anderson, 1976; Komoski, 1977; Sive, 1978, 1983; Hewitt, 1980, 1982; Kressel, 1986; Bates, 1974, 1987b; Mayor & Dirr,1986; Holt, 1989; Portway, 1989). The models are more useful to designers than to telecourse adopters who are not selecting media for production but are faced with a pre-produced package of media to be adopted or rejected (Holt, 1989). The model and the evaluation instrument should require the evaluator to consider all phases of the telecourse, including student needs.

Assumptions of the Study

Three assumptions of this study are:

1. Many respondents are better than one (Harman, 1975; Dalkey, 1969a, 1971b) and expertise exists at different levels among the respondents (Harman, 1975) due to different experiences with media and distance education.
2. The respondents have the ability to report their perceptions accurately and that student achievement in distance education is a function of in-school and out-of-school factors.
3. The total of the respondents to the first round questionnaire will be reduced when the second round questionnaires are received and this will have no effect on the study.

Limitations of the Study

Limitations of the study are:

1. The number of institutions which have been identified as producing and offering distance education programs.
2. Identifying enough individuals within the institutions who are involved in aspects of distance education including administrators, producers, faculty, and staff.
3. Little research has been done on distance education and as a result many programs are still run on opinion and perception rather than fact. The instrument which is created will be a consensus of reflected opinion and perception rather than fact.
4. The study does not include the student end-user. Since students and educators often evidence a range of opinion on any given topic, the researcher plans future research that will be done with students.

Chapter II

Review of Related Literature

Distance Education

The literature related to distance education provides evidence of its growth to the point where it has become a major movement in higher education (Rumble & Harry, 1982; Zigerell, 1986). Distance education utilizes telecommunications technologies to teach students at a distance from the campus. The technologies include video, audio and data transmission by broadcast and satellite television, cable, fiber optic cable, audio, videodisc, and computers, augmented by textbooks, study guides, laboratories, and seminars. Through technology, post-secondary institutions reach students who are unable to attend campus classes due to distance, time, or disability constraints, and make education accessible (Mayor & Dirr, 1986).

Unwin (1969) suggests that through these technologies we communicate in the idiom of the age and argues that if the development of an education system is to be in line with the technologies and truths from which it draws its reason for existence, then teachers must reconcile traditional methods of instruction with new ideas by integrating the new methods.

Mayor and Dirr reflect that we need to realize the demands that all of these changes place on learners to function independently. It is too easy to say, "Here, work on your own and integrate the materials at hand" (1986, p. 101). Mayor and Dirr assert that ways must be found to prepare students for the challenges that the new opportunities provide. To earn faculty support, we must demonstrate how to use the new tools and materials to serve them and their students by improving telecourse quality and making education accessible (Mayor & Dirr, 1986).

Media Research

Chu and Schramm (1967) stated that the effectiveness of television had been demonstrated in well over 100 experiments and that adults learn a great amount from instructional television. In 1977, after reviewing over 300 studies, Schramm also concluded that there was no significant difference between learning in classroom and television; this was again validated by Johnston

(1987). Levine (1987) argues that the conclusion to draw from these studies is that television instruction is equivalent to traditional, classroom instruction in its learning; there are "good and bad television courses as there are good and bad campus-based courses" (p.16). The question is on what basis should one separate good and bad telecourses?

We know very little about how to use television and how to support students in their use of television (Bates, 1974). The educational use of technology cannot reach its full potential until research uncovers more about the learning process and how it varies in each individual with different instructional treatment (Costello & Gordon, 1961; Saettler, 1979). For years, investigators have attempted to identify those media best suited to teaching various instructional objectives. The research has not yielded results that permit definitive statements about the superiority of one medium over another in a particular situation (Chu & Schramm, 1967; Schramm, 1977). The pattern of research results obtained may have come about for a variety of reasons. In many studies, two media are used to present instruction and the relative effectiveness of the two are compared. Often, students learn equally well from either medium (Chu & Schramm, 1967). Kumata (1961) contends that hundreds of studies have attempted to discover an effect which is directly attributable to the delivery method; most conclude that it makes no difference whether television is absent or present. Wagner and Wishon (1987) state that media research has not been able to provide concrete selection guidance and that research designs have decreased the ability to generalize the findings. Research has focused on the media as a product rather than on component interaction, or processual aspects which lead to learning outcomes. Others, believe that the findings reflect the situation and it does not matter which medium one chooses to teach a particular objective, as any can do the job equally well. Gagne states that "most instructional functions can be performed by most media" (1970, p. 364) but the statement in no way denies that in a given situation one medium may be more useful than others (Schramm, 1977).

Media research does not provide a clear direction for telecourse evaluators as it does not address the question of how components of a telecourse interact to produce learning outcomes where there are differences in learners, instructional treatments, and content.

The Adult Education Model

Meierhenry (1981) observed that adult educators must have a clearer understanding of how media and technology contribute to achieving educational objectives and how the teacher's responsibility is to integrate the human and nonhuman resources. Gueulette (1986) describes this collaboration between adult educators and technologies as an "imperative mission," (p. vi).

Farnes (1975) pointed out that the Open University , a distance education institution, was operating under an authoritarian system so that the only responsibility the student had was to select courses. Farnes states that the extrinsically motivated system lead to high attrition, withdrawal of personal commitment, and other forms of "pathological behaviour" (p. 3). Farnes observed that the course development teams experienced exciting and immensely demanding learning tasks as they acquired and organized knowledge. He states that "if it is in the course teams that there are genuine learning experiences, should we not allow the student to participate in these learning experiences by delegating more of the job to him (p. 3)?" Farnes concluded, "It is a tragedy that as soon as normally responsible adults come into contact with education they expect to be told what to do and what to learn. Worse still, we as teachers play along with this and find it much easier to meet these expectations than to create the conditions in which students will take responsibility for their own learning" (p. 3).

Potvin (Clennell, 1975) found it helpful in planning adult distance education programs to create a climate conducive to adult learning. He maintains that learning improved when adults lost their dependence, which was created by the traditional educational methods. Potvin attributed the increased learning to the student's experiences being used as a learning resource, intrinsic motivation, and knowledge sought being related to immediate problems. As they learned to assess their learning needs they became increasingly self-directing.

According to Knowles (1983) the media have not been used effectively for adult education because they have been seen as one-way transmissions of teacher-controlled instruction which does not result in optimal learning; they are based upon the pedagogical model of education and the entertainment model of media use. Knowles recommends the andragogical model of learning

and the educational model of media. Andragogy is defined as "the art and science of helping adults learn" (Knowles, 1975, p. 19). Knowles makes the distinction among the andragogical and pedagogical models of teaching based upon sets of assumptions about learners which teachers make. The teacher who makes one set of assumptions will teach pedagogically whether he or she is teaching children or adults, whereas the teacher who makes the other set of assumptions will teach andragogically whether the learners are children or adults (Knowles, 1975).

The pedagogical model revolves around teacher-directed learning where the learner is seen as having a dependent personality, the learner's experience is built on rather than used, readiness to learn varies with levels of maturation, orientation to learning is subject-centered and motivation is gained through extrinsic rewards and punishments controlled by the teacher (Knowles, 1975). The andragogical model revolves around the learner who is seen as becoming increasingly more self-directed. The learner's experience is considered to be a rich resource for learning, readiness to learn is developed from life tasks and problems, the orientation to learning is task or problem-centered, and the learner's motivation is intrinsic and driven by curiosity (Knowles, 1975).

Following the andragogical model, the teacher sets an informal climate which is supportive, collaborative, consensual and mutually respectful. Planning is conducted by participative decision-making, needs are diagnosed through mutual assessment, goals are set by mutual negotiation, learning plans are carried out by learning projects executed by learning contracts which are sequenced in terms of learner readiness. Learning activities are conducted through inquiry projects, independent study, and experiential techniques. The evaluation of the learning which has occurred is done through mutual assessment of the evidence which is prepared by the learner (Knowles, 1975). Knowles sees the model as being a process design rather than a content plan (1985) so that there is no attempt to cover particular content areas; instead the student samples content in relevant problem situations (1984). He explains that it is useless to have a stockpile of content information without having a process or method by which to handle it (1984). The key features of the model are interaction, task-centeredness, individualization, and self-directedness.

Interaction: Knowles states that learning is most effective when learners engage interactively in the inquiry process. Interaction can be introduced between the learner and the program using interactive videodisc, computers, and interactive reading materials. Knowles attributes the failure of learning machines in the late sixties to the lack of learner involvement. He feels that branching programs are being adopted because of learner involvement. Interaction can also be introduced between the group and the program by telephone where the learners discuss content by phone with an instructor who is in a studio. Knowles observes that this is being done successfully now in teleconferencing and in computer-assisted learning with superior results in terms of learner involvement and learning outcomes.

Task-centeredness. Knowles observes that adults are usually motivated to learn in order to perform tasks associated with their lives. He states that they seldom learn something for its own sake, or to accumulate academic credits. For media programs to be effective with adult learners, Knowles states that they must be organized around the acquisition of the knowledges, skills, understandings, attitudes, and values that are applicable to performing the life tasks with which adults are concerned. Knowles (1975) states that one of the most significant findings from research (Tough, 1979) about adult learning is that when adults go about learning something naturally, rather than being taught, they are highly self-directing. He finds that evidence is accumulating to support that what adults learn on their own initiative, they learn more deeply and permanently than what they learn by being taught.

Individualization. Knowles believes that the individual differences among adults, and especially among adults of different ages, are great. To accommodate these differences, media programs need to provide a wide range of learning options which can take into account differences in backgrounds, readiness to learn, motivation, learning styles, developmental stages, and learning pace. Knowles believes that if these factors are missing, a structured media program based upon the standardized curriculum of traditional education will not attract adult learners.

Self-directedness. Knowles states that adults have a deep psychological need to be responsible for their lives and develop the self-concept of being responsible; this leads to a need to

be seen and treated by others as being capable of making their own decisions. In media programs a way of doing this is through actively involving and making the adult responsible for decisions about what they are going to learn, how they are going to learn it, when they are going to learn it and how they are going to verify that they have learned it. This is the basis for the self-directed learning contract in which adult learners reconcile imposed requirements from institutions with their need to be self-directing (Knowles, 1975). Through learning contracts, the mutual responsibilities of the learner, the teacher, and the institution are made visible (Knowles, 1975).

Havighorst (1960) categorizes adults into three broad age range brackets, associating definite roles and tasks with each category. His premise is that society imposes expected achievements at various intervals upon the adult to complete such tasks in order to be successful or normal. He designated three age range categories: early adulthood ranges from 18 to 35 years; middle age ranges from 30 to 55 years of age; and later maturity begins at 55.

Dwyer (1984) observed that present methods, principles, and guidelines for organizing content may not adequately use the possibilities suggested by andragogical theory. If based upon adult learning theory, Dwyer feels that media would be very differently organized than it is now so that the tightly integrated, cohesive, consecutive and fast-moving instructional sequence may be less effective for adult learners than the discrete unit with intermittent presentation. Dwyer suggests that adult learners will profit most if instructional sequences can provide a range of responses. Dwyer notes that perception is now depicted as constituting boundaries of interactions between adult learners and the media from which they select, ignore, or reject cognitive inputs. The interaction depends on student need, activity in progress, personality characteristics and goals. Dwyer concludes that this has profound implications for the design, development, and implementation of meaningful instructional experiences which help the adult learner meet educational goals (1984). Since adult motivation and attitudinal behavior are important in the communication process, more information is needed before a reliable and valid measuring instrument for the variables can be developed (1984)

Media Selection Models

A number of media selection models have been developed to help educators evaluate and select media. How useful these models are is questionable as it is rare to find information about where the models were used (Wagner & Wishon, 1987). Reiser and Gagne (1983) concluded that there is limited empirical evidence about the merits of models; their final conclusion was that choosing a model is not simple. They suggest that an approach to media selection is to identify model features, decide which features are important, and select a model containing them.

Bates (1974) argues that it has been a mistake to consider media merely as a service to subject disciplines. He states that media use should evolve from a partnership where the academic and media specialist have equal status and responsibility to organize and produce media. Bates feels that a great mistake has been made in casting media into competitive models (such as the following media selection models suggest) so that the media are misused. Rather, he suggests that media should be used in conjunction with one another which allows different things to be done through a whole new range of teaching objectives and methods which to some extent will allow the media to determine what is to be taught and how it is to be taught (Bates, 1975). This may seem to make media take precedence over subject matter, but he argues that if there were no books, teachers would teach differently through dialogue; since books and dialogue exist, both are used. He continues that if media is considered to be primarily a means by which information is distributed, then books and television have a functional equivalence, even if their characteristics are different. If courses are designed from the beginning with media in mind, one is still free to reject their use. The methods available for teaching will inevitably influence what is taught; form and content are interactive (Bates, 1974). Bates (1987b) contends that there is a lack of sound theory of media selection based on pedagogic criteria partly because of differences among educators about the best way to teach, and partly because media selection has not until recently been a major problem facing educators. Consequently, Bates (1987b) observes, most instructors have not bothered to use media to a significant extent; those that have used media have acted purely on intuition and were influenced considerably by what is conveniently available. Bates (1974) concludes that at

Great Britain's Open University, it is impossible for an academic to teach without making use of media because the system ensures that courses are designed from the beginning with the potential of media in mind by a course team which is composed of the academic and media specialist who have equal status and responsibility.

Two studies compared selection techniques. Braby (1973) compared the usefulness of ten media selection techniques. Models judged superior were Briggs (1970), the Training Analysis and Evaluation Group (1972), and intuitive techniques. Romiszowski (1974) found that using a selection technique which he developed helped users made better choices than did an intuitive approach (Reiser & Gagne, 1983).

Reiser and Gagne (1983) reviewed nine media selection models (Anderson 1976; Branson, Rayner, Cox, Furman, King & Hannum,1975; Bretz, 1971; Briggs & Wager, 1981; Gagne & Briggs, 1979; Gropper, 1976; Kemp, 1980; Romiszowski, 1974; Tosti & Ball, 1969) to yield the comparisons described here. The models presented media features in flowcharts, matrices, or work sheets. An essential difference among these formats is the procedure for decision-making each demands. Flowcharts (Anderson; Bretz; Kemp; Romiszowski) lead to a progressive narrowing of media choices. Questions about media selection are posed in a particular order, and as each is answered, the number of candidate media is reduced. The matrix display (Branson, et al.) includes all of the selection criteria so that one tallies the criteria met and their relative importance. Work sheets present a tabular array of media characteristics against desired criteria (Briggs & Wager; Gagne & Briggs) and require that media selection be deferred until all criteria have been considered. A number of media classification categories have been devised including audio, print, still visual, motion visual, and real objects (Reiser & Gagne, 1983). Media categories are usually connected with the idea that one medium can best present a task having a similar classification (Reiser & Gagne, 1983). Most classifications depend upon characteristics of the display such as visual, motion, or auditory. Tosti and Ball propose classifying types of interactions and Gropper categorizes by feedback capabilities.

Visuals**:** All models required a decision on using visual media. Some distinguish among types of visuals (Branson, et al.; Kemp; Tosti & Ball). Visual media help students acquire concrete concepts, such as object identification (Anderson, 1976; Bretz, 1971; Romiszowski, 1974), spatial relationship (Bretz, 1971), or motor skills (Bretz, 1971) where words alone are inefficient.

Printed words**:** All models required decisions on the use of printed words. There is disagreement about audio's superiority to print for affective objectives; Bretz (1971) favors audio, but Anderson (1976) favors print. Anderson (19786) and Romiszowski (1974) do not recommend verbal sound if it is not part of the task to be learned.

Sound: A distinction is drawn between verbal sound and non-verbal sound such as music (Branson, et al., 1975; Bretz, 1971; Gagne & Briggs, 1983; Kemp, 1980; Tosti & Ball, 1969). Sound media are necessary to present a stimulus for recall or sound recognition (Anderson,1976; Bretz 1971; Romiszowski,1974). Bretz (1971), Briggs and Wager (1981) recommend audio narration for poor readers.

Motion: Branson, et al. (1975), and Kemp (1980) force decisions among still, limited movement, and full movement visuals. Motion is used to depict human performance so that learners can copy the movement (Anderson,1976; Romiszowski, 1974). Bretz (1971) asserts that motion may be unnecessary and provides decision aid questions based upon objectives.

Color: Decisions on color display are required (Branson, et al., 1975) if an object's color is relevant (Anderson, 1976) to what is being learned (Dwyer, 1978; Heidt, 1978; Schramm, 1972).

Realia: Realia are tangible, real objects which are not models (AECT, 1977) and are useful to teach motor and cognitive skills involving unfamiliar objects (Anderson, 1976; Romiszowski, 1974). Realia are appropriate for use with individuals or groups (Kemp, 1980; Briggs & Wager, 1981). Using realia is situation based in the other models. Dale (1969) stresses the benefits of using realia to present information realistically but his viewpoint was questioned (Dwyer, 1978; Heinich, et al., 1982; Salomon, 1981). Winn (1982) indicates that it is more important that the presentation corresponds with the way learner's represent information internally.

Instructional Setting: Seven models are concerned with home or school instructional setting and group size. A rationale for these decisions is not included except for print instruction delivered in an individualized mode which allows the learner to set the learning pace (Bretz, 1971). Bretz suggests that the ability to provide corrective feedback for individual learners is important and notes that any medium can provide corrective feedback by stating the correct answer which allows comparison of the two answers.

Learner Characteristics: Most models consider learner characteristics. Gagne and Briggs (1983) point out that media may be differentially effective for different learners. Although research has had limited success in identifying the media most suitable for types of learners several models are based on this method (Bracht, 1970; Cronbach,1977).

Reading ability should be considered (Branson, et al., 1975; Bretz,1971; Briggs & Wager, 1981; Gagne & Briggs, 1979). Pictures facilitate learning for poor readers who benefit more from speaking than from writing because they understand spoken words; self-directed good readers can control the pace; and print allows easier review (Briggs & Wager, 1981).

Older or more experienced learners may have developed learning strategies that enable them to manage instruction (Briggs & Wager, 1981; Gagne & Briggs, 1979; Tosti & Ball, 1969) and may need fewer external aids (Gagne & Briggs, 1979). Briggs and Wager (1981), and Gagne and Briggs (1979) mention Dale's (1969) cone of experience tool to identify suitable media by age group. The cone lists 12 media categories and experience in an ordered hierarchy. For cognitive objectives, it is efficient to use abstract media with older learners and concrete media and experiences with younger learners. For attitude formation objectives abstract media should be used for younger learners, and concrete media and experiences used for older learners (Briggs & Wager, 1981).

Categories of Learning Outcomes: Categories ranged from three (Anderson, 1976) to eleven (Branson, et al., 1975) and most include some or all of Gagne's (1977) learning categories; intellectual skills, verbal information, motor skills, attitudes, and cognitive strategies. Several models (Branson, et al., 1975; Briggs & Wager, 1981; Gagne & Briggs, 1979; Gropper, 1976) suggest a

procedure which categorizes learning outcomes, plans instructional events to teach objectives, identifies the type of stimuli to present events, and media capable of presenting the stimuli.

Events of Instruction: The external events which support internal learning processes are called events of instruction (Gagne,1977; Gagne & Briggs, 1979). The events of instruction are planned before selecting the media to present it (Branson, et al. 1975; Briggs & Wager, 1981; Gagne & Briggs, 1979; Gropper, 1976; Romiszowski, 1974; Tosti &Ball, 1969). Two models (Briggs & Wager, 1981; Romiszowski, 1974) use charts to indicate the degree to which a medium is appropriate to present instructional events.

Informing the learner of the objectives (Gagne & Briggs, 1979) provides them with an indication of learning expectations to maintain their task orientation. Bretz (1971) indicates that visual media which can portray motion are best to show psychomotor or cognitive domain expectations by showing the skill as a model against which students can measure their performance.

Many models discuss eliciting performance where the student practices the task (Gagne & Briggs, 1979) which sets the stage for reinforcement. Several models indicate that the elicited performance should be categorized by type; overt, covert, motor, verbal, constructed, and select. Media should be selected which is best able to elicit these responses (Gagne & Briggs, 1979; Gropper, 1976; Romiszowski, 1974; Tosti & Ball, 1969) and the response frequency (Tosti & Ball, 1969). Gropper (1976) advocates a behavioral approach so that media is chosen to elicit responses for practice.

To provide feedback (Gagne & Briggs,1979) about the correctness of the student's response, a interactive medium is chosen. Gropper (1976) suggests that learner characteristics such as error proneness and anxiety should influence media selection; Bretz (1981) asserts that any medium can provide feedback.

Testing (Gagne & Briggs, 1979) which traditionally is accomplished through print, may be handled by media (Bretz, 1981). In Bretz's (1981) view, media are better able to assess learners' visual skills than are print media and can be used to assess learner performance in realistic situations.

Summary of Reiser & Gagne (1983) Model Comparison: Media selection can be affected by a model's physical form of display; matrices or work sheets defer media choices until all criteria are examined. Flowcharts progressively narrow media choices and are easier to use if the user has minimal media selection experience. Decisions about media are influenced by the selection factors included in a model. In reviewed models, selection criteria focus on the medium's physical attributes such as the ability to present sounds or motion while others focus on learner characteristics, instructional setting, and the learning task. Proper identification of the media attributes is dependent upon consideration of learner characteristics, instructional setting, and the learning task.

The choice of learning theory as a basis for rational model derivation means that other groundings have been rejected. While it is evident that several other characteristics of media cannot be ignored, they do not appear to have been successful as bases for the generation of positive media selection procedures. This includes a variety of categories pertaining to media attributes as mode of sensory stimulation (Romiszowski, 1974), physical nature of stimulation (Bretz, 1971), type of learning experience (Dale, 1969), function with respect to the learner (Tosti & Ball, 1969), or some combination of these (Anderson, 1976; Kemp, 1980).

The applicability of schemata and matrices to instructional problems is limited despite the express claims to the contrary (Reiser & Gagne, 1987). The main problem is that ready-made classifications claim to be reliable instruments appropriate to all instructional situations and applicable without modifications. In reality each instructional situation contains a set of factors which may determine the media. Attempts to classify media should not aim at the development of a media taxonomy as a final, generally applicable multi-dimensional decision matrix. What is required is a detailed description of each medium, which uses more specific ratings than "applicable - partly applicable - not applicable" so that the user can develop a decision model tailored to an instructional problem (Reiser & Gagne, 1983, p. 140). Because of the number of instructional situations, there are a multitude of factors which determine the media .

Reiser and Gagne's model (1983) is a flowchart containing six panels, each representing an instructional situation which cover student competence, delivery method, and instructor or self-instruction with readers or non-readers. The procedure used to arrive at a fewer media is to answer questions on course objectives; the objective's domain of learning outcome, instructional setting, student reading competence, cost, availability, and convenience.

Bates (1980) suggests that the efforts to demonstrate that there are linkages between type of media and objectives intended to teach are fruitless. He states that the impact of television must be seen as depending on a combination of media and factors related to the general organization of the instructional program, factors relating to the video programs, and factors related to the learner. The positive effect of the variety of media has been confirmed in a number of studies. Bates (1982) showed the clear advantage of using radio and television to supplement readings versus readings alone. Schramm (1977) reviewed several studies of multi-media programs in higher education environments; his general conclusion was that students who work with a combination of media do significantly better than others.

Summary of Selection Models. While there is agreement in the literature that media selection is important, the models illustrate the range in opinion on how it should be selected. The models are more useful to designers than to telecourse adopters who are not selecting media for production but are faced with a pre-produced package of media to be adopted or rejected (Holt, 1989).

Evaluation Instruments and Models for Distance Education Materials

Current Media Selection Methods

It is not clear that any formal evaluation using appropriate media selection methods is being used (Kressel, 1986). Distance education professionals could not recommend and are not using a telecourse evaluation procedure (Kressel, 1986) because an evaluation instrument does not exist (Teague, 1981). A related problem is that a critical analysis of what is effective when delivered by technology is unavailable (Kressel,1986). Bernard (1974) notes that evaluation problems and results are massive and complex; traumatic experiences indicate that these are not abating. Evaluation problems which have been overlooked have led to the misuse and overuse of

inconsequential telecourses (Gueulette, 1986). As a result, the decision to use a telecourse is not well grounded and may lead to minimal student learning (Niemi, 1971; Knowles, 1983) because the telecourse is ineffective in its instructional design, inappropriate for learners, or does not fulfill course objectives (Meierhenry, 1981). It is probable that the result is a great deal of ineffective instruction (Gueulette, 1988). Since it is likely that more video will be used, it must be used judiciously and correctly (Gueulette, 1988).

Telecourse Adoption Process. Evaluations are not conducted by experienced personnel with media selection expertise using a model or evaluation instrument to select the best telecourse.The 1980 Corporation for Public Broadcasting (CPB) study showed that colleges have two decision points in telecourses; to use telecourses and to offer a specific telecourse. The initial decision to use telecourses often "just happens," because of the interest of one person (CPB, 1980, p. 5). Adoption decisions were based on availability, quality, cost, perceived need, and potential enrollments (CPB, 1980).

An Annenberg/CPB Project (ELRA, 1986) study showed that the adoption process was most often initiated by a consortium representative who may not have media expertise; administrators or department chairs review the materials 80 percent of the time and faculty members review the materials in 55 percent of the cases. The study showed that the prime criteria for telecourse adoption was the ability of the telecourse to attract new students; this suggests that the ability to generate tuition income was more important than educational outcomes, however, the study did not clarify the reason. The second and third criteria were respectively, course content quality (no evaluation method was reported), and the ability to provide new resources or approaches. The findings were consistent with Blackburn and Ging (Dirr, 1986), who added the suitability of the telecourse's level of difficulty and curricular adaptability. Dirr (1986) reports that these elements also affect successful telecourse adoptions; 1) low cost; 2) long lead time; 3) familiar and credible information source; 4) faculty and administrators with positive attitudes about telecourses; and 5) a history of successful innovation adoption.

The method generally used for selection is for an administrator to identify telecourses by contacting producers for preview materials to give to the selection committee who make the decision to adopt, reject, or modify the telecourse and its components (Zigerell, 1986).

Recommendations for Evaluation Procedures. Administrators responsible for the program must be familiar with the telecourse instructional system so that they can brief evaluators (Zigerell, 1986). Successful telecourse users agree that the more actively faculty participate in telecourse selection, the stronger the resulting program will be (Zigerell, 1986). Hezel (1987) observes that while many faculty members remain suspicious of technology, they must be included in the planning process.

A faculty member or a panel qualified to judge the subject matter, instructional design, and production quality, should evaluate a representative sample of telecourse components. Print is central to the method and each component must be judged in relation to what it contributes to the whole and how it aids independent learning. Zigerell (1986) suggests the 1) study guide and 2) video programs, be reviewed; an impression gained from watching one program is not a sufficient basis upon which to recommend adoption; producers showcase their best efforts on preview tapes which may not be representative of the telecourse.

Telecourse Adoption Personnel. The inexperienced evaluator who may be the instructor, administrator or a consortium committee composed of individuals without academic credentials (Zigerell, 1986), is highly criticized in the literature because of the profound effects which poor media selection can have on the educational environment (Wagner & Wishon, 1987). Historically and currently, there has been little emphasis by educators on how to plan for, prepare, evaluate, and utilize media (Meierhenry, 1981). Unwin (1969) observes that most university staff are suspicious about technology and seem apathetic toward and unaware of the potential of the more sophisticated devices. Insights, wisdom, perception, and precision applied in the process of media selection are an index of professionalism among educators (Sleeman, Cobun, & Rockwell, 1979).

Meierhenry (1981) observes that even though the greatest technological revolution of this era is considered to be information, adult educators seem oblivious to the potential as well as to the impact on their field. Knowles (1983) predicts that by the end of this century most education will be

delivered electronically - if educators learn to use media in congruence with adult learning principles. Moore and Shannon's 1982 study of adult educators supports Knowles and reveals the adult educators' media inexperience.

Tanzman and Dunn note that media technology has soared ahead of utilization (1971). While media experts are using increasingly sophisticated technology, the fact is ignored that the teacher is bewildered by technology (Heidt, 1978) and "cannot use it, will not use it, or does not know how to use it" (Tanzman & Dunn, 1971, p. 25).

Chu and Schramm (1967) found that instructional technology required instructors to learn new roles and processes which they tend to resist because they perceive difficulties in using new techniques. Russell (1979) and Coder (1983) found that faculty tend to teach by lecture as they were taught, not as they were taught to teach by using media. Coder (1983) found that due to a lack of courses, faculty were unfamiliar with learning theory, instructional design, or media utilization, a fact supported by Doerken (1977) who states that studies indicted that only 17 percent of all teachers had any training in the use of media. In 1983, Doerken reported that it would take an estimated $400 million to provide training. During the 1984-85 Annenberg Study (Riccobono, 1986) about half of the institutions offered faculty only two to seven hours of training in media but ten to 15 hours of training in the instructional uses of computers. The figures did not report how many faculty members were trained. Bates (1987b) observes that there is a major requirement to train instructors in the selection and use media.

Lack of training in the use of educational technology has also been a problem in Japan (Nishimoto, 1969) and in Britain (1966.) The lack of training in the effective use of educational technology and the tendency of faculty members to continue to teach by lecture contributed to technology resistance in these countries. Studies in Japan (Nishimoto, 1969) and in Great Britain (Britain, 1966) concluded that the effectiveness of education can be improved by training the teacher to use technology. Tanzman and Dunn (1971) state that media supervisors do not provide the leadership to encourage faculty to use media and that in-service training in effective media use has not resulted in skill transfer because; 1) media techniques vary markedly from the way teachers

have been taught; 2) mechanical fear; 3) lack of professional acceptance; 4) lack of funding for media experts; and 5) decision makers' resistance to technology primarily due to a lack of understanding of its use and value.

Telecourse adoption personnel are usually composed of, and the decision to adopt a telecourse usually rests with, administrators, faculty and others (Zigerell, 1986; Brey, 1988) who do not have media selection skills (Jones, 1965; Unwin, 1969; Tanzman & Dunn, 1971; Kemp, 1975; Heidt, 1978; Sive, 1978; Meierhenry, 1981; Moore & Shannon, 1982; Knowles, 1982; Kressel, 1986; Zigerell, 1986; Mayor & Dirr, 1986; Bates, 1987b; Holt, 1989; Portway, 1989). There is a pressing need to train them in media selection and utilization (Jones, 1965; Unwin, 1969; Tanzman & Dunn, 1971; Kemp, 1975; Heidt, 1978; Meierhenry, 1981; Knowles, 1982; Moore & Shannon, 1982; Lewis, 1985; Kressel, 1986; Mayor & Dirr, 1986; Bates, 1987b; Hezel,1987; Holt, 1989; Portway, 1989). There is a need to help faculty utilize media (Mayor & Dirr, 1986; Kressel, 1986) so that learners are central to the process (Niemi, 1971); mastering the technology will take time and commitment (Mayor & Dirr, 1986; Kressel, 1986).

Unwin (1969) states that the faculty's function is to organize learning situations and interpret them after students experience them through technology. Faculty who are untrained in media selection do not effectively plan media use or ways to support instructional objectives (Sive, 1983, Bates, 1987a; Gueulette, 1988). Unwin (1969) feels that one instructor in a thousand is now equipped to do this. Sive (1983) observes that educators have had little practical help with purposeful selection. During the evaluation and adoption process the judgment of the effectiveness of media is too frequently based upon general impressions, isolated praise or criticisms, personal hunches (Brown, 1964), intuition, imitation (Niemi, 1971), comfort with the media, or its availability (Sive, 1978). It is vital that adopters be aware of the importance of evaluation and develop evaluation skills (Brown, 1964) since sophisticated instructional demands dictate that judicious use replace hit-or-miss selection (Sive, 1978).

The selection is a subjective one often made with little consideration to objective selection criteria which could provide a basis for making a logical, educated guess (Kemp, 1975). Komoski

(1977) decries spending public money on inappropriate media only because a more appropriate piece was not selected. Kressel (1986) questions how educators are to know which packages to select for which students or how to select packages adaptable to their teaching style.

Lewis' (1985) study of faculty involved with instructional media identified problems of how to: 1) convey abstract concepts and relationships between abstract concepts and concrete experience; 2) motivate students and encourage active learning; 3) deal with learning differences; 4) encourage generic skill and ability development; and 5) obtain funds to train faculty. Faculty consider media appropriate to address the most difficult instructional problems, but also value course management, student contact and providing experiential learning (Lewis, 1985). He reports that faculty who used technology more were likely to agree that it can overcome instructional problems and are less bothered by obstacles that frustrate untrained colleagues. Faculty identified lack of training, funds, access to hardware, and lack of descriptive and evaluative software information as obstacles to effective use of technology (Lewis,1985).

Training for Telecourse Adoption Personnel. If the use of media and technology is to be increased, educators must learn how to reach educational goals and objectives through the media (Meierhenry, 1981). A 1979 EPIE study found that fewer than five percent of teacher training institutions surveyed offered courses in the selection of teaching materials. Master's degree programs in instructional technology do not, as a rule, require a course in selection; many do not even offer one (Sive, 1983). Hezel (1987) assumes that the most effective uses of technology will be made by faculty members who understand its potential, and strongly recommends that telecourse adoption should be preceded by educational technology seminars for faculty and education administrators. Henault (1971) recommends that training for adult educators be extensive while others suggest that instruction should include video production (Tanzman & Dunn,1971; Moore & Shannon,1982).

Methods to train instructors in media selection and use include in-service professional development provided by media center personnel (Matthews, 1972; Russell, 1979; Thompson, 1969; Owen 1972; Lindquist, 1981) who should determine the training needed (Powell, 1982a;

1982b). Other methods include publishing a newsletter to share information about instructional technology (Owen, 1972), viewing tapes on effective media use, reading about and observing the media, and visits to production houses (Powell,1983; Smith, 1961). Teague (1981) recommends instructor training in the basic dynamics of learning, student motivation, adequacy of teaching techniques, and timing of learning tasks.

The Need for a Telecourse Evaluation Media Selection Model and Instrument

Clear telecourse evaluation procedures do not exist in the literature (Sive, 1983; Kressel, 1986) nor does it provide an empirically based evaluation instrument to facilitate telecourse adoption (Reiser & Gagne, 1983; Kressel, 1986; Holt, 1989; Portway, 1989). Distance education professionals could not recommend nor are they using a telecourse evaluation model or instrument (Kressel, 1986; Holt, 1989; Portway, 1989). Due to the lack of appropriate evaluation the adoption of a telecourse is not grounded in empirically based methodology (Kressel, 1986; Reiser & Gagne,1983; Knowles, 1981; Teague, 1981; Bates, 1987b; Holt, 1989; Portway, 1989). As Kressel asks, "What is a credit-worthy telecourses vs. slick television?" and "What is sound education vs. entertainment? (1986, p. 6)." She concludes that there is no evaluation model or instrument in place to adopt to ensure that students will learn from the telecourse and thus no current answer to the question, "Is it sound education worthy of credit? (p. 6)" Unless faculty understand evaluation, technology is useless (Tanzman & Dunn, 1971).

There is agreement in the literature that media should be evaluated; however there is little agreement on what constitutes good telecourse evaluation (Tanzman & Dunn, 1971; Armstrong, 1973; EPIE, 1973; NEA, 1976; Bergeson, 1976; Anderson, 1976; Komoski, 1977; Sive, 1978, 1983; Hewitt, 1980, 1982; Kressel, 1986; Mayor & Dirr, 1986; Bates, 1987b; Holt, 1989; Portway, 1989). Part of the problem is that a critical analysis of what is effective when delivered by technology is unavailable (Kressel,1986).

Educational literature is flooded with instruments which have been developed for use in evaluating media (Teague, 1981). Many forms have been developed for localized use (Teague,

1981). Because of inadequate training, faculty are at a loss with media and look for practical decision making instruments to guide them in the selection and use of products (Heidt, 1978).

Improved media selection procedures can change this situation (Sive, 1978; Niemi, 1971; Teague, 1981; Holt, 1989; Portway, 1989). An adoption process which includes the careful use of an evaluation instrument for telecourses based on appropriate media selection methods would ensure that adoption personnel evaluate telecourse components and adopt resources that will contribute to student learning (Teague, 1981; Holt, 1989; Portway, 1989). Such an evaluation instrument would guide faculty in developing personal media selection skills (Reiser & Gagne, 1983; Kressel, 1986; Holt, 1989; Portway, 1989).

The evaluation form would be useful to: 1) ensure that selection committee members evaluate the same items and use the same scale for judgments; 2) to guide adopters through the selection phase so that components are evaluated with the goal of student learning clearly focused; and 3) act as a training instrument for adopters who frequently do not have a media background and are not media selection experts (Holt, 1989; Portway, 1989).

Sive (1978) notes that few writers have analyzed what makes a workable selection tool. She observes that existing selection procedures may be among the factors causing the second class status of media as the purchases are made without the benefit of a thoughtful reviewing process (1983). For media to be instructional rather than supplemental aids to instruction, more sophisticated media selection procedures are indicated (1978). Sive (1978) observes that methods to find out about media do not exist such as those for books; most media is not reviewed or rated for its suitability for use for a specific purpose; telecourse reviews receive significantly less space than educational computer programs and only a fraction of non-book media reviews; library catalogs and bibliographic tools such as Books in Print do not exist for media; there is little comparison of new and existing products; and cross-media approaches are unknown where two products on the same subject are compared (Sive, 1978, 1983). Baker (1979) called the casual and undisciplined selection of media a scandal.

A review of the literature on guidelines for media selection for pre-school, elementary, secondary or post-secondary instructors did not provide a method (Teague, 1981). Teague analyzed evaluation forms and concluded that several factors limit their effective use (1981). Most are for use with elementary and secondary materials; evaluate only one medium; ask for broad conclusions; include no reference to evaluative criteria; ask for excessive amounts of non-evaluative information; and are too detailed and lengthy to be of practical use.

As the cited literature suggests, the message that a suitable evaluation method should be established has been regularly repeated since the inception of the telecourse. With over 300 telecourses (Brey, 1988) and 350,000 pieces of instructional media available for use, choosing suitable material is a problem (Bernard, 1974; Sive, 1978, 1983; Holt, 1989; Portway, 1989).

Criteria for the Evaluation of Distance Learning Materials

The purpose of evaluation is to find out the extent to which the goals or objectives of an educational activity are being achieved (Zigerell, 1986). Reiser and Gagne state that selection of media is a "burning" question in order to make instruction optimally effective (1983, p. 3) and they observe that much instruction is not planned to be optimally effective.

Existing media selection models variously emphasize physical features or human senses. Clark and Angert (1981) reviewed media selection models and concluded that they are preoccupied with technical considerations such as convenience and portability and are weak on instructional design considerations. Schramm (1977) points out that no procedure can be applied to all situations and guidelines should consider local needs, situations and resources. Bates (1980) states that the primary concern is how the media interact. The literature review produced the following concerns.

Instrument Terminology. When the term understanding or appreciation is used, it should delineate the specific nature by student behaviors (Mager, 1961; Diamond, 1964).

Values. The program is in keeping with the principles that guide the user institution (Lundgren, et al., 1972). Materials represent artistic, historic, and literary qualities (American Association of School Librarians {AASL}, 1976).

Educational Objectives. The student is central to the learning experience (Myers, 1972; Niemi, 1971; Bates, 1975a); evaluation should be done within the total context of student learning (Bates, 1975b); educational needs are defined so that they can be met (Lundgren, et al.,1972; Bates, 1975a) for the educational system and individual programs (Bates, 1987a); expected changes in student behavior, attitudes or interest are defined (Brown, 1964); curricular objectives are stated (Armstrong, 1973; NEA,1976); media contributes to specific instruction goal achievement (Brown, et al.,1972; Bates, 1975a; AASL,1976); the extent to which stated objectives are achieved (Bates, 1975a; Brown,1977); objectives are stated by cognitive, affective and psychomotor domain (Sive,1978); objectives are measurable and can measure success or failure (Brown, 1964); lesson objectives give adequate direction for student study (Duchastel, 1983; Gow & Yeager, 1975); and whether students can correctly identify educational objectives (Bates, 1975a).

Characteristics of students should be known (Armstrong, 1973; Bergeson, 1976) including their initial competence in the topic (Lesser, et al., 1972). Material should be suitable for learners (Erickson, 1968; Sive, 1983) with an appropriate level of content complexity (Lesser, et al., 1972; AASL, 1976; Brown, 1977; Brown, et al., 1972; EPIE, 1973; Sive, 1983) and vocabulary (Lesser, et al, 1972) which accommodates ability differentials (Bruner, 1960; Schramm, et al., 1967; NEA; 1976; EPIE 1973; Sive 1983).

Compare the similarity of the campus class with the telecourse; objectives, course experiences and content should be equivalent. Supplements or experiences can be developed or adapted to make the courses similar (Zigerell, 1986; Levine,1987); the course should be adaptable to many teaching situations, populations, and methods (Sive, 1983); and the course should be of interest to students as a required, elective, or interdisciplinary course (Levine, 1987).

A report, such as a producer's field evaluation of student learning, should be available to provide learner verification data on the product's effectiveness (Eash, 1972; Dirr, 1986; Sive, 1983. The method for evaluation and assessment which has been validated should be described (EPIE, 1973; Brown, 1977; Erickson, 1972) and the evaluation should be directly related to the course objectives (Diamond, 1964; Lesser, et al., 1972).

The delivery method should be considered: loaned tapes are available when needed, facilitate repetition, search and mastery, analysis, relating, and reflection, are easier to integrate. Broadcast programs are shown perhaps once at a fixed time, do not facilitate repetition, search, mastery, analysis, relating or reflection and are more difficult to integrate (Bates, 1987a). The control characteristics of casettes should be exploited, of segment use, clear stopping points,use of activities, indexing, close integration with other media (text, etc.) and concentration on audio-visual aspects so that the video cassette is to the broadcast what the book is to the lecture (Bates, 1987a).

Instructional Design. Consider the schedule of learning set up for the student so that students are not overloaded (Bates, 1975b). Consider the time required to complete the course; the number of lessons (Armstrong, 1973; Sive, 1983); appropriate segment length (Diamond, 1964; Sive, 1983); stated instructional objectives (Anderson,1976); it is fully planned (Erickson,1972); has an appropriate level of abstraction; uses visual, audio and tactile components (Bergeson,1976); directs student activity toward specified learning outcomes by frequent overt and covert responses (Griffith & MacLenna, 1964; Curtis, 1989); the familiar is used as a bridge to the unfamiliar; and a range of direct and indirect methods is used (Lesser, et al., 1972). The material should be broken into manageable chunks (Bates, 1975a); the first two lessons are shorter; lesson size is easily managed, not too long or difficult to discourage students (Schoch, 1983; Wong & Wong, 1978-79; Curtis, 1989); lessons are self-paced to allow student planning (Armstrong, et al., 1985; Menmuir, 1982; Ladd, 1989); and the production pacing maintains interest (Curtis, 1989). Telecourse components should be examined for high quality; components should make learning experiences occur (Stoffel, 1987); accomplish individual objectives for which they were created (Lesser, et al., 1972); utility of each component part (Sive, 1983); provide realia (real objects) (Anderson, 1976; Bretz, 1971; Stoffel, 1987); effectively use graphics (Northcott & Holt, 1986); components should be easy to use (NEA, 1976); useful (Erickson, 1972); well packaged; transportable; available (Armstrong, 1973); have an appropriate quantity (Northcott & Holt, 1986); should include concepts of appropriate difficulty; relate ideas and link discussion. Components should be examined for relevance of reading rates - speed vs. critical reading; readability; use of unexplained technical

terms; overall coherence and consistency; argumentative and indices of fallacious reasoning; does not make assumptions, draw conclusions in error, or masquerade examples as definition or opinions as fact; clarity; well phrased instructions and questions; have complete, adequate, and useful proofs; show a balance of active and passive assignments; should contain self assessment questions and activities to make the student think and evaluate progress (Bates, 1975); and have appropriate role, position, and function of summaries (Northcott & Holt, 1986). Material should appeal to the students' interests, achievement and background (NEA, 1976; Knowles, 1983); and provide a stimulus to creativity (AASL, 1976). Components should correlate well with one another so that they are integrated (Bates, 1975a).

Self instruction should be encouraged (NEA, 1976; Farnes, 1975; Knowles, 1983) through strategies which motivate student learning (Bruner, 1960; Schramm, et al, 1967; Curtis, 1989), hold student attention (Bruner, 1960; Schramm, et al., 1967; Curtis, 1989) and stimulate students. Students should be provided with help to develop basic learning skills such as fast and selective reading, essay writing, development of objectivity, and knowing how to learn from television and radio (Bates, 1975a). In the early stages of students' experience with self-instruction, there should be a progression from a structured situation to a situation where students are able to organize material in their own learning package including more responsibility for deciding which areas to study, how to organize the study; and how to present it (Bates, 1975a). The programs should move from highly didactic to open ended (Bates, 1987a); the structured learning should not limit the students' learning so that students should do creative thinking (Bates, 1975a). The presentation should avoid using many facts so that students find contexts and causal connections to create the students' ability to critically analyze what they see and hear and help them find their own way to knowledge. Emotional experiences should be provided (Lundgren, et al.,1972; Knowles, 1983; Ladd, 1989). Student work should be based upon andragogical (adult education) principles (Farnes, 1975; Knowles, 1983).

Media can be used for learner interaction and feedback (Sive, 1978, 1983) by providing for student drill (Bruner, 1960; Schramm, et al., 1967; Bates, 1987b) and using techniques to motivate

students to work and study (Lesser, et al., 1972; Knowles, 1983); by actively involving learners through writing, talking, manipulating, competing, cooperating (Haney & Ullmer, 1975; Knowles, 1983; Curtis, 1989), critical viewing (Gueulette, 1980) or activities on tape or in print components, or in some way respond to the teaching material to considerably increase learning effectiveness (Bates, 1987b). Feedback should be immediate (Boucher, et al., 1973; Knowles, 1983; Curtis, 1989) and timely to induce lesson submission (Armstrong, et al., 1985; Stephens, 1979); the assignment turn around time should be no longer than five days to increase student completion rates (Rekkedal, 1982; Taylor, et al., 1986). Feedback should provide the correct response and a commentary on the incorrect response. The presentation sequence and rate should be learner controlled with branching to alternative units after incorrect answers (Boucher, et al., 1973; Knowles, 1983; Curtis, 1989). The instructional strategy should vary as a result of both current and past learner behavior and portions should repeat at the learner's volition (Boucher, et al., 1973; Curtis, 1989). Students should have activities such as answering questions (Bates, 1975a).

All student learning styles should be addressed (EPIE, 1973; Boucher, et al., 1973; Bergeson, 1976; NEA, 1976; Meierhenry, 1981; Bates, 1987a) as individuals may be primarily visual, auditory, tactile, conceptual, or quantitative in various combinations (Boucher, et al., 1973; DeNike & Stroether, 1976) to focus on human learning and ensure learning for all students (Reiser & Gagne, 1983). Audio components should be provided for auditory students; visual components for visual students; and realia, models and other objects provided for tactile students (DeNike & Stroether, 1976). Strategies should match student cognitive styles, previous experience and presentation factors (Perrin, 1977). Cross-modal reinforcement should occur frequently where the same message is given through two modalities - words and pictures (Lesser, et al., 1972).

Strategies should meet adult viewing styles which are open learners (about 33 percent who are interested in the world and learning, slightly older, more highly educated, who see television as one source of information), uninterested learners (50 percent of viewers who are not interested in learning, watch television for entertainment and have a low level of formal education), and instrumental learners (15 percent of population who are interested in learning as a means to a better

job, young, upwardly mobile, blue collar or office workers, mid range in formal education, but do not consider television as a knowledge source) (Matsui, 1981).

Assignments should be specific to course content and may be created by students through the use of self-directed learning contracts (Knowles, 1983). Assignments should help students become self-directed and adapt to local needs by utilizing faculty expertise through syllabus development and suggesting successful assignments for distance learners (Bates, 1975a; Levine, 1987). Students should not be overloaded with more material than can be handled (Bates, 1975a). Facilities should be available for laboratories (Levine, 1987). The first assignment should be due early (Pfeiffer & Sabers, 1970; Wong & Wong, 1978-79), within 14 days (Armstrong, et al., 1985), or within 40 days (Billings, 1987). There should be a great number of assignments due rather than one project or several large projects (Wong & Wong; 1978-79), or one major assignment due each month (Bates, 1975a). Computer marked assignments should be used (Bates, 1975a).

Content. Content should be examined (Armstrong, 1973; EPIE, 1973; Brown, 1977); for appropriate scope of content (Armstrong, 1973); accuracy (AASL, 1976; Erickson, 1972); authenticity (Brown, et al., 1972; Erickson, 1972); typicality (Erickson, 1972); in good taste (Erickson, 1972); reflective of research in learning (AASL, 1975); utilizes innovations in instruction (AASL, 1975); authoritativeness of materials (EPIE, 1973); clarity (Brune, 1960; Schramm, et al., 1967); and illustrative of the interplay of process and growth of content (McLuhan, 1964). The same thing should be said more than once in different ways (Lesser, et al., 1972) to replicate the central points (Bruner, 1969; Schramm, et al., 1967; Lesser, et al., 1972). The course should be interesting and stimulating (Finkel, 1982; Bonani, 1982; Curtis, 1989), and provocative (Bonani, 1982); lessons should be exciting to positively influence completion (Erdos, 1967; Holmberg, 1980; Schoch, 1983); and the video should have a long shelf life (Sive, 1983; Curtis, 1989).

Differing viewpoints should be provided (EPIE, 1973; AASL, 1976); controversial issues should be handled fairly without evidence of bias (Erickson, 1972; AASL, 1976). The pluralistic society of multiple ethnic, racial, religious, social, geographic, and sexual characteristics should be represented (AASL, 1976; NEA, 1976; EPIE, 1973). The material should be relevant to today

(AASC, 1976; NEA, 1976) and the copyright should be recent (NEA, 1976; Erickson, 1972; Sive, 1983) and not older than two years (Sive, 1983). The material should be important and interesting to the learners (Erickson, 1972; Bruner, 1960; Schramm, et al., 1967).

Textbook. The textbook should be recommended by the producer (Levine, 1987; Brey 1988); be acceptable (Brey, 1988); be as attractive as other textbooks to hold attention (Lundgren, et al., 1972; Brey, 1988); be high quality, well presented and lavishly illustrated (Bates, 1975a); be up to date; available on time; have further editions planned; have a clear role in course design; be widely used and the author's credentials should be appropriate (Levine, 1987) and recognized (Brey, 1988). The textbook should encourage students to learn (Bates, 1975a). The textbook should correlate well with other components (Levine, 1987) and should match video revisions (Bates, 1975a). If the text must be augmented a second text will have to be found or written if one is not recommended by the producer (Brey, 1988). If a reading anthology is recommended, it can be used to tailor the course to a particular focus by eliminating reading assignments (Levine, 1987).

Faculty Guide. The telecourse should have a faculty guide (Sive, 1983; Levine, 1987) to act as a guide for the new telecourse instructor (Levine, 1987); provide in-depth discussion about instructional design (Dirr, 1986; Levine, 1987); discuss content embodied in the components and how they relate to one another (Dirr, 1986); present detailed teaching strategies and evaluation strategies; contain background information on course development, developers, consultants, and advisors along with their credentials; and course goals (Levine, 1987). The guide should contain a course outline by lesson (Dirr, 1986; Levine, 1987); weekly student activities for 12 to 15 week academic terms (Dirr, 1986); test bank or suggested tests, (Levine, 1987); alternative course structure (Dirr, 1986); recommend varied uses of course materials; list required or suggested materials and sources (Levine, 1987); bibliography (Dirr, 1986) and sample promotion material (Levine, 1987). It should contain segments to guide students in learning from television, viewing holistically, finding patterns, developing analytical skills (Salomon, 1983) and other explanation about the broadcast (Bates, 1975a). If the guide does not exist, local staff should have the experience to supply the necessary faculty support (Levine, 1987).

Human resources to support the telecourse should be considered (Lundgren, et al., 1972; Anderson, 1976; Bretz, 1971) including whether the local instructor is competent (Brown, 1964) and whether the telecourse matches the instructor's teaching style (EPIE, 1973). The instructor should write the course syllabus, assign additional readings, make assignments and grade them, hold an opening structured seminar, hold face to face meetings with individual students (Bates, 1975a), call class meetings, maintain contact with students by mail, phone and meetings to add content for students' consideration (Finkel, 1982; Rouse & Lewis, 1984; Sweet, 1986; Billings, 1986; Levine, 1987); maintain student interest through study groups to provide support and raise completion rates (Broomall, 1980; Sewart; 1981, 1982; Brey, 1988; Pascarella & Chapman, 1983; Tinto, 1975). The instructor should be interested in and encouraging to the students (Anandam & Fleckman, 1978; DiSilvestro & Markowitz, 1982). Technical facilities should be considered (Lundgren, et al., 1972) including, library access (Menmuir, 1982), physical circumstances (Brown, 1977) and other logistical considerations (Bergeson, 1976).

A test bank should provide (Sive, 1983; Dirr, 1986; Levine, 1987) questions which are suitable for correspondence or proctored testing and based on the content (Diamond, 1964). Viewing video programs should be linked to student assessment (Bates, 1975b). Test keys should include a listing of where answers are found in the content; (Northcott & Holt, 1986). The test bank should have many types of short answer questions which can be graded by computer and suggest short essay questions. Test validity should be described (Northcott & Holt, 1986). Students should be allowed to choose and provide evidence of learning (Knowles, 1983).

Student Study Guide. The study guide should be recommended by the producer and be acceptable (Brey, 198). The guide should be an important component of the telecourse which ties all course elements together to help the student complete the course (Quinn & Adams, 1989). It should be written by content specialists as the telecourse was developed and contain lesson-by lesson guides to meet course objectives, list additional readings, optional activities, and can be augmented by faculty or sections which can be added or omitted depending on curriculum (Quinn & Adams, 1984). Research shows that student completion rates increases by 10 percent if the

study guide is written by the instructor (Brey, 1988). The guide should teach students how to use the telecourse by explaining the function of the broadcast and give students guidance in what to look for, how to approach the program (Bates, 1975a), should train the student to look at video events holistically, to use analytic processes, what to focus on, and how to discern patterns (Salomon, 1983) and self directed learning strategies (Knowles, 1983). The guide should contain segments on objectives, components, lesson outlines, video outlines, glossary, key concepts, references, exercises, self-tests with explanations (Levine, 1987).

Pre-broadcast notes should be brief, but should clearly state the purpose of the program and what students are supposed to do before during and after seeing or hearing the broadcast or tape (Bates, 1975b). Audio cassettes are not lectures but are tightly integrated with print to talk students through diagrams, illustrations, statistics or provide discussion material for analysis (Bates, 1987a).

Computer Software. Recommended software should be suitable; easily available with appropriate site and home licensing at a suitable cost (Bretz, 1971). Software is appropriate to content and used to present and test rule based procedures, areas of abstract knowledge where there are clearly correct answers so that educational objectives are achieved (Bates, 1987b). Computers can be loaned to students (Bates, 1987a). Logistics, including computer access (Anderson, 1976; Bretz, 1971) to provide software to students should be suggested and the software should be available in many versions for many types of computers (Dirr, 1986; Levine, 1987; Brey, 1988).

Video: Uses the full presentational power of video; words, still and moving pictures, events occurring in real time, show or accelerated motion, animation and text (Bates, 1987a). Production should be high quality as this correlates with lower attrition and higher grades particularly for borderline students (Gallagher, 1977). The technical quality should be acceptable (AASL, 1976; Brown, 1977; Erickson, 1972) or excellent (Erickson, 1968), balanced and satisfying (Brown, et al., 1972), meet professional standards (Lundgren, et al, 1972; Lesser, et al., 1972) or meets national broadcasting production standards which is essential because of its motivational impact on students as the pleasure of watching the programs breaks the students' inertia of beginning to study (Bates,

1975a). The video format should not differ too much from what is considered to be a good general commercial television program (Lundgren, et al, 1972; Sall, 1979; Curtis, 1989) with an expensive appearance to compete with commercial television (Lesser, et al., 1972). Programs should be one-hour or can be shown as one-hour to meet normal programming times (Dirr, 1986). The number of programs should be high as more programs correlates with lower attrition (Parlett & Woodley,1983). Tapes should be available for student loan as this has considerable advantage over a pre-scheduled distribution by cable (Bates, 1975a, 1987a). The video should not rely heavily on the lecture format (Lesser, et al., 1972; Blythe & Sweet, 1979; Weingartner, 1974; Curtis, 1989) or show students in a video class unless it is a teaching method class; the instructor should talk to the viewers for interaction (Lundgren, et al, 1972; Curtis, 1989). Chemical experiments should be performed in an industrial laboratory to show the experiment's industrial application (Lundgren, et al., 1972) to demonstrate experiments or experimental situations where equipment or phenomena to be observed are large, expensive, inaccessible or difficult to observe without special equipment (Bates, 1974). The video should use the medium's unique possibilities to give students content that they would otherwise not get or see (Lundgren, et al., 1972). The plot should not be wild or slapstick (Curtis, 1989). The use of video material should be influenced by relevance more so than dramatic quality (Bates, 1974). Video is not used for dense, abstract ideas, comprehension of detailed arguments and facts; it is used to deal with abstract ideas through the use of concrete examples, stimulates sophisticated level of thinking which leaves interpretation and analysis open to the student (Bates, 1987).

Programs should have structure (Lesser, et al., 1972), organization (Lesser, et al., 1972; Brown, et al., 1972), sequential progression (Armstrong, 1973; EPIE, 1973; Erickson, 1972), be well paced (Anderson, 1976; Bretz, 1971) to provide variety (Lesser, et al., 1972) and a content development rate which holds attention and facilitates learning (Lesser, et al., 1972) so that they are more swift than real life but not frenetic (Curtis, 1989). Video should be used to increase the students' sense of belonging (Bates, 1974).

The video should demonstrate human interaction and time-space relationships to illustrate principles involving two, three or n-dimensional space (Bates, 1974); to act as a bridge between the concrete operational and formal, more abstract stages of learning (Bates, 1987a); words (audio and written), dramatizations, and music should generate attitudes and interest (Merrill & Goodman, 1972; Curtis, 1989); uses case illustrations, dramatizations, and supplantation (formulas, scope, rotation, animation, etc) to advance content (Salomon, 1983); advance the content; complete coordination and integration between audio and video should exist; video should present unique material not found in the classroom; video should present well known content in unique forms; video takes society to the student to form links between class and life; video should use many open ended methods to encourage student inquiry (Lundgren, et al., 1972); to change student attitudes towards a particular subject area by presenting material in a novel manner or from an unfamiliar viewpoint (Bates, 1974); and allow students to look into something otherwise inaccessible (Bates, 1983). For student comprehension and instruction on how to approach television, video sequences should show the whole sequence, then repeat it with each sentence presented as a separate entity which is explained and elaborated upon; in later programs the elaboration should be decreased to give the student more independence (Salomon, 1983). The video should encourage students to interpret, analyze and problem solve by facilitating the students' ability to apply knowledge, evaluate evidence or arguments, analyze new situations, bring insights to portrayed situations and suggest solutions (Bates, 1987a).

The camera work should be considered (Sive, 1978)) for appropriate and imaginative use of video which advances the content (Lesser, et al., 1972). Video should visualize the abstract to provide contrived images that present in visual form the concepts and relationships for which students cannot conjure images on their own (Salomon, 1983). The screen should be used to its full potential with camera angles (single and two shots, point of view, over the shoulder, close-ups, wide shots, and camera focus changes) (Curtis, 1989) and techniques (zooms, pans, swish pans, cuts) to attract attention through pictures, sound bites, demonstrations, diagrams, and graphics (Lesser, et al., 1972). The video should show the world to create authenticity and effectively use

color and motion (Lesser, et al., 1972). Effects should provide pace change and the material should dictate the use of effects such as wipes, freeze frames, flips, computer graphics, split screens; effects should not be used because the technology is available (Curtis, 1989). Styles of clothing etc. should not detract (Curtis, 1989). Clarity should be maintained by smooth bridges between segments and programs (Salomon, 1983). Clear demarcations between discontinuous segments should be apparent in settings, presenters, etc. (Salomon, 1983).

The use of sound should be considered (Sive, 1978) so that sound, music, and sound effects emphasize content (Lundgren, et al., 1972). Sound should be imaginative, advance content (Lesser, et al., 1972), add variety and pace and does not use a continuous music bed (Curtis, 1989). Pictures are provided with clear verbal narratives for clarity (Salomon, 1983).

The video instructor is important to the telecourse (Lundgren, et al., 1972; Portway 1989); is on camera (Lundgren, et al., 1972); is competent (Brown, 1964); conveys interest in the content; transmits enthusiasm (Lundgren, et al., 1972; Portway, 1989); and personality and appearance add to the effectiveness. The instructor does not lecture or preach (Lesser, et al., 1972; Bates, 1983; Salomon, 1983; Curtis, 1989) so that concepts are difficult to grasp and understand (Salomon, 1983) but simplifies the message by using understandable language, humor to motivate, make content palatable (Lundgren, et al., 1972) and act as change of pace; humor is situational, not slapstick (Curtis, 1989). A diversity of experts, talent, and characters provide variety (Lesser, et al., 1972) and good acting with believable dialogue.

Costs. Costs should be considered (Reiser, 1981; Reiser & Gagne, 1983; NEA, 1976; Brown, 1977; Bergeson, 1976; EPIE, 1973; Bates, 1987b) as they relate to funding (Anderson, 1976; Bretz, 1971). Costs should be considered as to their appropriateness for a given media system and the proportion of money and resources to be devoted to various aspects of a media system; capital costs and recurrent expenditures, equipment obsolescence, staff, space and overhead, cost and delivery should also be considered (Bates, 1987b). The cost effectiveness of the program to other programs on the same subject should be compared (Brown, et al., 1972) by projecting student per head costs and relationship to shelf life (Sive, 1983), and student per head program costs to

purchase and deliver (Bates, 1987b). Media costs versus face to face instruction should be considered , broadcast costs versus loaned tape costs, and other economies of scale where more students will make the media more cost effective (Bates, 1987b).

The Model and Evaluation Instrument

Bates (1974) observes that there is very little experience with multi-media learning and that very little has been codified, validated or communicated to others. Based upon the literature review, the model and its evaluating instrument should require the evaluator to consider the educational objectives, instructional design, student study guide, computer software, video production, content, textbook, faculty guide, and cost. The wrong criteria are applied to judge the value of a telecourse (Bates, 1974). Teague (1981) feels that it is imperative that the evaluation of learning resources be approached with the same high degree of professionalism that should characterize every aspect of planning and implementing instructional programs. Evaluation of learning resources always involves making value judgments about the educational worth of the resources (Teague, 1981). It requires a well-developed measuring and evaluative instrument to: 1) guide adopters through the evaluation process; 2) give direction to the evaluative process so that all evaluators deal with the same evaluation questions; 3) and lead evaluators to sound professional judgment so that decisions are as appropriate as possible (Kemp, 1971; Teague, 1981; Holt, 1989; Portway, 1989).

Most methods suggested general evaluation procedures, such as making sure that the material fulfills existing content and class instructional goals (Teague, 1981; Sive, 1983). Teague (1981) strongly suggests that an evaluation instrument should directly reflect specific criteria and force the evaluator to apply the appropriate criteria to the resources being considered. Sive (1983) and Zigerell (1986) suggest using the evaluation form to certify the academic level and equivalency to existing curriculum. No instrument for evaluation will totally ensure that every resource used will be a positive learning experience for every user (Teague, 1981), however, using a model and an evaluating instrument based upon the model will help ensure the selection of resources that will make genuine contributions to student learning.

Sive (1978) suggests that a systems approach to media selection which is recommended in existing models is not easily accomplished by the adopter. Anderson (1976) agrees saying that the decision process is complicated and difficult because it is based upon a combination of interrelated factors. He notes that many authors provide detailed descriptions of media characteristics but when faced with the question of which to use, the adopter falls back on the concept of choosing the "least expensive one that works" (1976, p. vi).

Bates (1987b) suggests a set of procedures such as a check list of questions that need to be answered which take all factors into account and cannot be related to one another quantitatively which may still result in an intuitive decision, but it will be based upon a careful analysis. Bates suggests that access to the media, costs, presentational and control characteristics of media, and organizational issues be considered (1987b).

The instrument should train the evaluator in media selection skills as components are evaluated and enable the evaluator to make an informed decision to adopt or reject the telecourse after the instrument is completed (Holt, 1989; Portway, 1989). An instrument will be an inestimable aid in achieving consistency in previewing (Sive, 1983) and should be usable by instructors, administrators, and others in distance education (Nolan, 1984; Holt, 1989; Portway, 1989). The instrument should be a valuable tool which standardizes telecourse evaluation and sets standards of excellence for distance education (Kressel, 1986). (See Appendix A - and E.)

Delphi Technique

The strengths of Delphi are that it systematically solicits and collates reliable consensus of experts; minimizes selection bias in working with experts to build consensus; and it does this by keeping respondents anonymous. By removing respondents from the social pressure of group behavior and eliminating confrontation through direct debate inherent in panels and committees (Sackman, 1974; Makridakis, 1983), it reduces the influence of psychologically biasing factors to reach majority opinion (Dalkey, 1969a). By asking respondents to reconsider their position in the second round, respondents review feedback and may reconsider questions they dismissed on the first round. Inquiry and feedback thus build consensus (Helmer & Rescher,1959; Brown, 1968) which is desirable for acceptance and implementation of findings (Dalkey, 1969a; Borg & Gall, 1983). It is applicable whenever decisions must be made based on informed judgment (Helmer, 1966) and is suitable for educational planning (Helmer, 1966; Brown, 1968).

The Delphi technique was chosen because of its ability to formulate group consensus based on informed judgment because precise information is lacking for telecourse evaluation(Helmer, 1966; Makridakis, et al., 1983); identify problems (Makridakis, et al., 1983); define and clarify educational planning issues which may include polar opinions (Helmer, 1966; Brown, 1968; Makridakis, et al., 1983); maintain respondent anonymity thus removing respondents from the social pressures or other aspects of small group behavior (Dalkey, 1969a, 1971b; Makridakis, et al., 1983); tap knowledge which is not neatly formalized but is distributed in the minds of people (Helmer 1967; establish priorities (Makridakis, et al., 1983); identify and evaluate solutions (Makridakis, et al., 1983); require respondents to re-examine their positions several times (Borg & Gall, 1983); adapt to small research budgets (Sackman, 1974); collect information from a geographically dispersed group of experts; and retrieve information rapidly (Sackman, 1974).

Literature Summary

The literature suggests that distance education is in an expansion phase with many new post secondary institutions joining the ranks of those which are currently offering telecourses. Because many telecourses are available adoption personnel must make decisions about the quality of the

programming and related components. As a form of media, distance learning materials have an equal need for effective evaluation. Evaluation of software is critical to ensure that quality materials are purchased which meet course objectives.

The problem is that no standardized, empirically based, or acceptable telecourse selection model, or instrument has been developed to provide evaluation. A further problem is the lack of training in media selection for most adoption personnel who are responsible for accepting, rejecting, or modifying a telecourse and its components.

There is a range of opinions among experts about which criteria should be used to evaluate telecourse components. During the development of the model and evaluation instrument, there is a need to analyze components and factors of distance education learning materials. The factors which are based on research are educational objectives, instructional design, content, textbook, faculty guide, student study guide, computer software, video, and cost. Each of these major factors contains related items which have been repeatedly discussed in the literature.

The best method to create a model and design an evaluating instrument is to develop a consensus among distance educators on prime factors that should be evaluated prior to telecourse adoption. Delphi is the best procedure to use in developing this consensus of expert opinion.

A model and an evaluation instrument which takes into consideration how the telecourse will function with all of its elements, the institution's services, the instructor's skills, and the student population will be a valuable addition to distance education. It could serve as a bridge to inform and train new distance education staff in aspects of distance education which are relevant to course adoption until more empirical research is conducted. The end point of what can be done when television is combined with other media has not yet been reached; this is the beginning of an educational revolution involving many forms of telecommunications (Hewitt,1982).

Chapter III

Method

Purpose of the Study

It is the purpose of this study to create a media selection model for credit telecourses and an evaluation instrument based upon the model to be used by post-secondary personnel involved in telecourse adoption.

Population and Sample

Harman (1975) recommends the following procedure to minimize selection bias in working with experts when using the Delphi technique; establish the total population of experts, and choose respondents by listing the field's overall and specific area experts so that conceptual and specific areas are represented. This procedure was followed and lists were obtained of distance education professionals working with post-secondary credit telecourses. The sample includes approximately 400 administrators, instructors, producers, directors, writers, instructional designers, distributors, consortia members, researchers, and authors who were found on lists from Annenberg/ CPB, National University Teleconferencing Network (NUTN), and National University Continuing Education Association (NUCEA). The sample represents known institutions which produce or use telecourses. Using the full known population increases the ability to generalize the instrument. It is assumed that new and experienced users of telecourses are included in the sample to assure that basic and sophisticated levels of questions will be part of the final evaluation instrument. (See Appendix B: Respondents to Both Rounds.)

Delphi Technique

The Delphi technique is a commonly used set of procedures for the systematic solicitation and collation of reliable consensus of expert opinions (Makridakis, et al., 1983). It is based on the premise that expertise exists about the subject and that many experts are better than one (Harman, 1975). Delphi was chosen because of its ability to: formulate group consensus based on informed judgment where precise information is lacking (Helmer, 1966; Makridakis, et al., 1983); identify

problems (Makridakis, et al.,1983); define and clarify educational planning issues (Helmer, 1966); discover polar opinions (Brown,1968; Makridakis, et al.,1983); remove respondents from the social pressures of small groups by maintaining anonymity (Dalkey, 1969a,1971b; Makridakis, et al., 1983); tap informal knowledge distributed in the people's minds (Helmer 1967); establish priorities (Makridakis, et al., 1983); identify and evaluate solutions (Makridakis, et al.,1983); require respondents to re-examine their positions (Borg & Gall, 1983); accommodate a geographically dispersed group; and rapidly retrieve information (Sackman, 1974).

The Delphi process is frequently used to generate solutions in much the same way that brainstorming is used in face-to-face sessions (Brown 1968). Brown likens it to decision makers depending upon the advice of experts. She points out that Delphi has the advantage of collating the opinions and the differences of opinions among the experts. The judgment of experts may be called on in any planning operation in which it is necessary to choose among several alternative courses of action (Brown, 1968). It is useful, as in this study, where no theory or model (Brown, 1968; Dalkey, 1969a) has been developed. In a Delphi study, the questionnaire items are generated by the researcher and respondents (Brown, 1968; Sackman, 1974).

Brown (1968) states that experts are used because they have at their disposal a large store of background knowledge and a cultivated sensitivity to its relevance which permeates their intuitive insight. A consensus of experts is needed because individual experts will disagree and one should be unwilling to rely upon the judgment of one specialist. Because a model or other useful material is unavailable, the researcher generated a representative group of questions and the experts were relied upon to formulate the problem based upon the representative group, to generate possible solutions, and then to evaluate the possible solutions and arrive at a consensus of opinion as to the best solution based upon their collective knowledge (Brown, 1968).

Delphi has been used to generate solutions for a variety of content areas. It is normally used when only informed judgment is available and when planning decisions must, of necessity ,be based on a series of intuitive judgments (Brown, 1968). Brown states: "Intuition and judgment permeate all analysis, not only as to which hypotheses should be tested or what facts are relevant but also in

supplementing a model of a process when the quantitative mathematical model is known to be inadequate." She concludes that it is inevitable that as questions to be answered get broader and more complex, intuition and judgment must supplement quantitative analysis to an increasing extent" (Brown, 1968, p 2).

Brown (1968) asserts that the use of expertise is not a retreat from objectivity as judgment and informed opinion have always played a crucial role in human enterprises. Delphi incorporates the use of expert judgment into the structure of an investigation and makes it subject to some of the safeguards that are commonly used to assure objectivity in any scientific inquiry (Brown, 1968). The result of a Delphi study is a presentation of observed expert concurrence where none existed previously (Sackman, 1974).

Procedure: The procedure consisted of obtaining individual answers to questions by survey; iterating the survey two times; controlling the feedback between rounds; and taking as the group response a statistical aggregate of the final answers (Dalkey, 1967, 1969a, 1971b; Brown, 1969; Harman,1975). The procedure causes the median to move, presumably because of convincing arguments or because those who changed their mind had a residual amount of information which was not exploited in the first round (Dalkey, 1968c, 1969a). This process usually causes the interquartile range to shrink, and improves accuracy (Dalkey, 1968c, 1969a; Brown, et al, 1969; Thompson, 1973).

Instrument

First Round Instrument. The review of literature showed that there was no existing model or instrument to evaluate post secondary credit telecourses; therefore, a questionnaire with 23 statements was created based upon the literature (Brown, 1968; Sackman,1974). It contained nine significant concerns that were derived as an interactive model of educational and media concerns. The nine areas of concern were: educational objectives, instructional design, content, textbook, faculty guide, student study guide, computer software, video, and cost. Items were developed from the review of the literature (Brown, 1968; Sackman, 1974) to provide a minimal representation of each of the nine areas of concern. In addition to the Delphi questions (part B), a number of

demographic questions were asked (part A) (See Appendix E). All Delphi questions were open ended to give respondents the opportunity to add subsidiary questions (Brown, 1968; Sackman, 1974) and to initiate discussion on items which they felt were important but which were not included in the first round questionnaire (Brown, 1968; Dalkey, 1969a, 1971b; Sackman, 1974).

The instrument consisted of a series of items and was divided into two parts; a number of demographic questions were asked in part A and part B contained the Delphi questions.

Part A: Questions about the respondent; name, address, telephone, department, title, degree and field, responsibilities, relationship to institution's telecourse program, years of experience, capacity (telecourse coordinator, instructor, etc.), and evaluations currently performed. Copies of existing evaluations or instructions on how to evaluate material were requested.

Part B: Operating under the Delphi technique, these statements related to the evaluation of telecourses which should be included in the model and the final evaluation instrument developed by this study. Respondents were asked to suggest subsidiary questions whose answers would be helpful in formulating the solution so that all respondents could consider the importance of the subsidiary questions to the evaluation in the second round (Brown, 1968; Sackman, 1974; Harman, 1975). Respondents were also asked to freely edit or modify the round one statements for clarity (Brown, 1968; Sackman, 1974; Harman,1975).

Second Round Instrument. It was expected that respondents would generate many subsidiary questions for consideration by the group for the second round based upon the 23 representative questions (Brown, 1968; Dalkey, 1969a, 1971b; Sackman, 1974).

The second round instrument was created based upon the feedback from the respondents; this included scores, as well as comments and suggestions for subsidiary statements (Brown, 1968; Sackman, 1974). In a Delphi study, it is typical to have a resource analyst to research subsidiary statements (Brown, 1968). The researcher performed this function (Brown, 1968). When a respondent(s) suggested a subsidiary question, it was researched and if the statement was supported in the literature it was accepted and appeared in the second round as a statement to be scored by all respondents to determine its importance to the evaluation (Brown, 1968). The

reference source was not cited for the respondents (Brown, 1968) but references are cited for all statements throughout Chapter 4.

Since first round statements are merely representative (Brown, 1968, Sackman, 1974), many related items were included in each of the 23 questions. When respondents suggested that a statement contained too many items, which were related but too dissimilar, the statement was separated for the second round (Brown, 1968). The statements were separated so that the respondents could score items more accurately (Brown, 1968). No element was removed as all had received 50 percent agreement in the first round (Brown, 1968).

Respondents also suggested wording changes to clarify the statement (Brown, 1968). The literature was consulted which contained the original wording to determine whether the intent of the statement was changed (Brown, 1968). If the intent was not changed, but clarified, the wording change was accepted (Brown, 1968).

Validity

Face validity is often used to indicate whether the instrument, on the face of it, appears to measure what it claims to measure so that persons using the instrument, accept it as a valid measure in the everyday sense of the word. While face validity is not a rigorous concept, its importance cannot be ignored on that basis (Baker, 1989). Its presence, in conjunction with other types of validity which could not be established until after the instrument was completed, reinforces overall acceptance (Baker, 1989). Face validity was verified as the items in the round one questionnaire were based on the literature review which was confirmed concurrently by a panel of judges.

In the Delphi technique, the instrument is not complete until after the technique has run at least two rounds. The first round questionnaire is used as a procedural tool to determine consensus (Dalkey, 1969a; Sackman, 1974; Rescher, 1969). Inquiry and feedback thus build consensus which establish the validity of the final instrument (Helmer & Rescher, 1959; Brown, 1968; Dalkey, 1969a; Borg & Gall,1983). In this study, experts reacted to two rounds of the questionnaire and had the opportunity to change the wording, add subsidiary questions (Brown, 1968; Sackman,

1974; Borg & Gall, 1983), defend positions, and continue the creation of the instrument. Opinions of new and experienced users were sought regarding what they need for an evaluation instrument.

Throughout the Delphi technique, the same procedure to ensure validity is used as that suggested by Long (1986) to ensure the validity of an instrument used for other survey techniques. He states (1986) that the content validity of an instrument is usually established by a judgmental process using experts in which a pilot test is conducted with the instrument. Descriptive statistics like the percent agreement of the judges' ratings are often used as indices of content validity (1986). This is the same procedure which is used throughout the Delphi technique and for this study. As a result, the percent agreement of the experts which was used to construct the final instrument, also ensures the validity of the final instrument. A pre-test and post-test were conducted with six experts to verify the validity of the first round and final instruments; first round statements met or exceeded 50 percent agreement of the judges and the final questions met or exceeded 80 percent agreement of the judges.

Generalizability: Generalizability is the degree to which the findings of a study will hold up when extended to materials not yet brought under research inquiry (Brinberg & Kidder, 1982). It is a function of the chosen population. For this study, the population is the total known population of telecourse users and producers and the number of respondents which could not be controlled. Long (1986) suggests choosing the least restricted population appropriate for the problem that will enable obtaining a representative sample without great hardship. This suggestion was followed and a large population of 400 professionals in the field was identified which represents the total known population in this field.

Reliability

The reliability refers to the ability of an instrument to obtain consistent results under similar conditions. Validity is concerned with whether the instrument is truly measuring the variables that are being studied. Dalkey addressed Delphi technique reliability stating that there is a kind of technology for dealing with opinion that has been applied throughout history which is based on the adage "Two heads are better than one," or "n heads are better than one" (Dalkey, 1969a, pp.10-14; 1969b, p 18); however, experts with apparently equivalent credentials such that their degree of expertness is equal, are likely to give quite different answers to the same question. A major advantage of using group response is that this diversity is replaced by a single opinion (1969a). Reliability of expert opinion in a study is considered to play the same role as reproducibility in experimental investigations (1969a) so that another study using the same approach and different experts arrives at similar results (1969a). The addition of self ratings shows a high and consistent correlation on accuracy between two groups answering the same question (Dalkey, 1969b).

Pre-test. A pre-test was conducted to establish content validity using six experts. (Oppenheim,1966; Harman,1975; Sonquist & Dunkelberg,1977; Long,1986). The purpose was to discover failures in question design; check for focus on the true points of interests; see if questions were valid and phrased correctly to measure and provide the answers to the study's questions; discover semantic difficulties; determine if the length was appropriate; ascertain optimal question order; locate layout and typographical errors; and clarify directions. A 50 percent agreement of the judges' ratings was used as an index of content validity; all questions met or exceeded 50 percent agreement. Minor wording changes were made for clarification.

Post-test. A post-test was conducted to establish content validity using six experts. In addition to the concerns addressed in the pre-test, the purpose was to discover if it provided the answers required for a pre-adoption telecourse evaluation form. The index of content validity was set at 80 percent agreement of the judges' ratings, the same percentage used to retain a second round statement. All questions met or exceeded 80 percent agreement by the judges.

Procedures

Anonymity. Anonymity of respondents was maintained; they did not meet (Sackman, 1974).

Format**.** The format was a paper structured formal questionnaire administered by mail (Sackman,1974). The second round questionnaire was written after the first questionnaire was analyzed and was mailed only to first round respondents.

Instructions. Instructions were printed on the questionnaires (Sackman, 1974). (See Appendix D). Respondent addressed cover letters and a pre-addressed, postage paid envelope accompanied mailings (see Appendix C). The study was identified on the stationary as a project of the University of Missouri - St. Louis Video Instructional Program.

Rounds. A modified two-round Delphi technique was used which reduces the number of questionnaire rounds from four to two based upon research which shows that there is seldom significant movement in the answers between the third and fourth rounds. (Dalkey, 1968, 1971b; Martino, 1972). Iteration consisted of performing the interaction among respondents at the beginning of the second round when the summarized results of the first round were fed back to the group (Dalkey, 1968). Iterations contained selected respondent feedback which was determined by the researcher (Sackman, 1974) and statistical feedback with a measure of central tendency for group knowledge and importance (Sackman, 1974). Iteration with feedback continued until consensus reached a point of diminishing return after the second round, which was determined by the researcher (Sackman, 1974). The Statview II statistical package was used to compute the statistics as it provides a complete array of statistical procedures (Ward, 1986).

Researcher and Respondent Procedures. These procedures were followed.

Researcher 1st Round: The first round questionnaire was written based upon the literature review, pre-tested, and rewritten. The first round instructions and questionnaire were mailed to the population with a cover letter explaining the study and asking for participation.

Respondent 1st Round: Complete the questionnaire, cite reasons for answers, modify or add new material (Brown, 1968; Sackman, 1974). Return the questionnaire.

Researcher 2nd Round: Analyze the data based upon a 50 percent consensus to retain or reject a statement. Based upon the analysis, prepare the second questionnaire to include new statements, comments, and mean statistics for knowledge and importance for each statement (Brown, 1968; Sackman, 1974). Mail to the first round respondents.

Respondent 2nd Round: Complete the questionnaire, cite reasons for answers, defend or criticize statements or comments, modify or add new material. Return the questionnaire.

Researcher's Final Procedures: Analyze the data. The 80 percent consensus of the expert subgroup is taken as the group consensus. Conduct a post-test and make corrections based upon an 80 percent consensus of judges' scores. Prepare the final instrument and mail it to the second round respondents.

Scoring. Scores are reported for the group of respondents who took part in both rounds of the questionnaire. Respondents ranked their knowledge and the importance of the statement to an evaluation on a scale of one (low) to four (high). The mean for knowledge and the mean for importance are reported separately. Both are valid indicators of the mean accuracy of group responses (Dalkey, 1969b). For this study, the concern was with the assessment of the excellence of the group judgment and not with the specific relationship of individual judgments to the group. The question is to what extent pooling the judgment of the group is an improvement over the individual 's judgment. Dalkey (1971b) attributed a 45 percent improvement in accuracy to iterated feedback, and self-ranking scores on subject knowledge and importance .

Knowledge Ranking. How much the respondent knows about the subject is a significant parameter of the study and is the least controllable variable in the experimental situation. It is assumed that individual judgments on value questions are based on incomplete or biased information. The respondents ranked their relative competence to answer each question on a scale of one to four indicating how heavily their answer should be weighted when the group's joint estimate was computed (Brown, et al, 1969): four indicated that they were "quite sure" of the answer; three indicated a "pretty good" idea about the answer; two indicated a "vague idea"; and one was a "sheer guess" (Brown, et al., 1969; Dalkey, 1969a,1971b; Harman,1975). The ratings

were purely relative, and depended on how much respondents felt they knew about the topic (Helmer, 1966, 1967; Brown, et al, 1969; Dalkey, 1969b). Respondents were aware of the weighting. A linear weighting gives each answer a weight of one, two, three, or four to correspond with the knowledge rating and the median of all final responses is taken as the group consensus (Dalkey, 1964; Thompson, 1973). An average group self-rating for each question was obtained by dividing the sum of the individual self-ratings by the number of subjects in the group. This result was a numerical index for each question, representing the relative amount of knowledge which the group felt that it had about a question (Dalkey, 1969). The median knowledge score of the group was reported on iteration. This allowed the concerns of less experienced telecourse users to influence feedback (Dalkey, 1969a; Thompson,1973).

Expert Subgroup. Those respondents ranking their knowledge at four, "quite sure" of their response to a statement, composed an expert subgroup for that statement (Dalkey,1969b). In order to make this assertion logically acceptable, it is necessary to assume that the judgment can be expressed in numerical terms for judgments about knowledge and importance (Dalkey, 1971b). In the absence of ways to distinguish among all respondents with respect to their ability to judge, the expert subgroup response is at least as likely to be correct as that of half of the respondents (Dalkey, 1969a).

Harman (1975) states that the basis of expertise is that there exist people who have so much more knowledge and understanding of the mechanisms underlying the problem that they can do an appreciably better job than a non-expert. There are no experts in the knowledge sense for evaluation questions, but there is a sub-population whose judgment is more relevant (Harman, 1975). An 80 percent consensus of the expert subgroup, based upon the median of the expert percentage scores, was accepted as the final group consensus (Helmer, 1966; Dalkey, 1969b; Kalton, 1983) and ensured that the true experts for the question had the strongest influence over the answer.

Two conditions are imposed on the selection of subgroups to increase accuracy; the difference in average self-rating between the subgroups should be one rank on a scale of one to four, and the

size of subgroups should be substantial for both higher and lower ratings subgroups so that a maximum of 75 percent ranked themselves in the lower three knowledge scores and a minimum of 25 percent ranked themselves at the highest score (Dalkey, 1969b)

Importance Ranking. Respondents were instructed to rate the relative importance of the question in terms of the contribution of that question to the general evaluation (Dalkey & Rourke, 1971a). Using a scale of four, a "very important" question received four points; a question of "some importance" received three points; a question of "dubious" importance received two points; and a question of "no importance" received one point. An average group importance rating for each question was obtained by dividing the sum of the importance ratings by the number of subjects. This result is a percentage for each question, representing the relative amount of importance the group attaches to the question (Dalkey, 1969). The median importance score of the group was reported on iteration.

Interquartile Deviation - QD. Delphi studies report findings about the interquartile distribution (Thompson, 1973; Clark & Clark, 1983). Given iteration with feedback, the group should exhibit convergence of opinion toward consensus (Dalkey, 1969b). Individual judgments should be reasonably influenced by the additional information furnished by feedback from the group so that shifts of individual responses toward the group response and reduction in group variability occurs (Dalkey, 1969b). This is reflected in the interquartile deviation (QD) which is a measure of the divergence of opinion among the experts (Brown & Helmer,1964).

In previous Delphi studies, the feedback technique has lead to increased accuracy of group responses in the spread of answers for the interquartile Q_2 which is the standard deviation of the middle 50 percent of responses on one statement. This is a valid indicator of the mean accuracy of group responses and indicates how widely the answers differed from one another (Dalkey, 1969b). QD is a better measure of dispersion than the range because it encompasses only the middle half of the series and unlike the range, QD does not consider the extreme end values (Clark & Clark, 1983).

The objective of Delphi is to cause convergence of opinion in the sense of shrinking the opinion spread as expressed by the interquartile range (Brown and Helmer, 1964) and to narrow the interquartile range without pressuring the respondents to the extent that deviant opinion is not allowed. This is done in part by asking deviants to justify their position (Makridakis, et al., 1983). A further objective is to cause convergence in the sense of more closely approximating the true value by the median (Brown & Helmer,1964). Typically on the first round, the answers are widespread. With iteration and feedback, the distribution of individual responses narrows (Dalkey, 1969a).

Calculation of the quartile points for ungrouped data is determined by first arranging the data in an ascending order, and then dividing the total number of observations (N) as follows:

$$\text{Quartile 1 } (Q_1) = \frac{N + 1}{4} \qquad \text{Interquartile 2 } (Q_2) = \frac{N + 1}{2} \qquad \text{Quartile 3 } (Q_3) = \frac{3N + 1}{4}$$

Dalkey (1969b) states that If respondents do not utilize the information reports of the group response on the first round when generating second round responses, it is inappropriate to consider these responses as judgment (Dalkey, 1969b). Favorable aspects of group value judgments depend in part upon the degree to which it is considered that the group is judging something rather than reporting personal attitudes. Conditions for assuming that group judgment is operating includes, high subgroup agreement, and change and convergence on iteration with feedback (Dalkey, 1971b).

Consensus. For the first round, consensus was deemed to occur if 50 percent of the respondents who took part in both rounds rated the statement at four for "very important. If the score was below 50 percent, the expert score was taken to deem consensus at 50 percent. For the second round, consensus was deemed to occur if the expert score was at 80 percent; if below that, consensus did not occur and the question was deleted.

Delphi cannot force latent consensus if it does not exist (Rescher,1969). For questions where opinions polarize around two schools of thought, so that the pattern of response is multi-peaked rather than single-peaked, both values are accepted (Helmer, 1966; Rescher, 1969). The decision to discontinue iteration and accept that consensus does not exist was made after the data from round two was analyzed (Martino, 1972; Sackman, 1974).

Feedback. An underlying premise of the Delphi technique is that respondents are better equipped to answer questions if they have some information on how others responded to the same question (Thompson, 1973; Harman 1975; and Dalkey 1967, 1968, 1969a, 1969b, 1971). The volume of feedback might be prohibitive if all comments were included so that editing of first-round data must necessarily be arbitrary (Helmer, 1966: Thompson, 1973). In a Delphi study, the questions may be generated by the researcher and the respondents (Brown, 1968; Sackman, 1974). In the first round, respondents suggested subsidiary statements for second round consideration (Brown, 1968; Dalkey, 1969a, 1971b; Sackman, 1974). The suggestions for subsidiary statements were summarized as one sentence statements for second round scoring (Brown, 1968; Sackman, 1974). Comments were sorted by dichotomizing opposing views and combining duplicate opinions, then summarizing them as one sentence statements (Patton, 1980).

In the second round, respondents were asked to compare their original scores with the median score and to revise their first round evaluations. Respondents retaining an outlier response were asked to provide written justification and citations to defend the response (Sackman, 1974; Thompson, 1973). Respondents could make statements criticizing or supporting statements and comments (Helmer, 1966: Thompson, 1973). Respondents were asked to consider all forms of feedback, including the subsidiary statements, and to revise their responses (Helmer, 1966: Thompson, 1973).

The second round is created based upon all of the respondents' feedback and includes the subsidiary questions, and first round statements which have been reworded or separated. Respondents consider all forms of feedback - scores, questions, opinions, and comments.

Reporting Final Results. The final instrument was sent to respondents.

Respondent Attrition. The effect of non-response has been minimized by beginning with the total known population. If respondents did not reply to the first round it was assumed that they would not take part.

Chapter 4

Results

Problem

Educational literature is flooded with instruments which have been developed for use in evaluating learning resources and instructional materials (Teague, 1981). There is agreement in the literature that media should be evaluated; however there is little agreement on what constitutes good evaluation (Tanzman & Dunn, 1971; Armstrong, 1973; EPIE, 1973; Bates, 1974; NEA, 1976; Bergeson, 1976; Anderson, 1976; Komoski, 1977; Sive, 1978; Hewitt, 1980, 1982; Kressel, 1986; Mayor & Dirr, 1986). Many forms have been designed for local applications (Teague, 1981). Bates (1974) contends that the wrong criteria have been applied to judge the values of a program.

Clear telecourse evaluation procedures do not exist in the literature (Bates, 1974; Kressel, 1986; Holt, & Portway, C. Lane interview, April 1, 1989). A critical analysis of what is effective when delivered by technology is unavailable according to Kressel (1986). Distance education professionals could not recommend and are not using a telecourse evaluation procedure (Kressel, 1986; Holt, 1989; Portway, 1989). A strategy for decision making is needed (Bates, 1987b).

Telecourse adoption personnel are composed of instructors and others who may not have media selection skills (Jones, 1965; Unwin, 1969; Tanzman & Dunn, 1971; Kemp, 1975; Heidt, 1978; Meierhenry, 1981; Knowles, 1983; Lewis, 1985; Kressel, 1986; Mayor & Dirr, 1986; Bates, 1987b; Holt, 1989; Portway, 1989). There is a need to help faculty master and utilize new resources and techniques (Mayor & Dirr, 1986; Kressel, 1986; Bates, 1987b; Holt, 1989; Portway, 1989).

As a result of these factors, telecourse adoption is not grounded in empirically based methodology (Bates, 1974; Kressel, 1986; Reiser & Gagne, 1983; Teague, 1981; Holt, 1989; Portway, 1989). Kressel asks, "What is a credit-worthy telecourse vs. slick television?" and "What is sound education vs. entertainment? (p. 6, 1986)." She concludes that there is no evaluation procedure to use which ensures that students will learn from the telecourse and thus no current answer to the question, "Is it sound education worthy of credit?"

Respondents. Four-hundred surveys were sent to distance educators. There were 178 respondents to the first round which was a 44 percent return rate. They were sent the second round survey and 112 responded which was a 62 percent return rate and 28 percent of the original mailing.

Geographic Distribution. Respondents represented all fifty states, Canada and Great Britain.

Experience. The mean number of years in the education field was 9.5 for the 178 first round respondents, and 9.9 for the 111 second round respondents. The range was from one year to 33 years.

Degrees. Respondents listed their degree (see Table 1) and major field (see Table 2).

Table 1

Respondents' Degree Level

Level	1st Rd. (%) n=178	2nd Rd. (%) n=112
Bachelor	14.5	13.4
Master	46.9	50.0
Doctorate	38.0	35.7

Table 2

Respondents' Degree Field

Degree Field	1st Rd. (%) n=178	2nd Rd. (%) n=112
Adult Education	6.7	8.0
Higher Education/Continuing Education	5.6	7.2
Education	16.1	19.6
Educational Technology/Mass Communication	26.7	29.5
Library Science	2.8	5.4
Business	9.4	7.1
Arts & Science	22.2	17.0
Other	10.6	6.4

Position. Respondents listed the capacity in which they worked with telecourses (see Table 3).

Table 3

Respondents' Position In Relationship to Distance Education Telecourses

Position	1st Rd. (%) n=178	2nd Rd. (%) n=112
Directly responsible for telecourses	62.2	67.9
Dean or administrator responsible for distance education	18.6	16.1
Instructor for a telecourse	8.5	6.3
Production of telecourses	10.7	9.8

Currently Using Evaluations. First round respondents were asked if they currently used an evaluation form or instructions and to return a copy of any forms or instructions currently used. Four had a pre-adoption evaluation instrument. Student evaluations of the telecourse after completion were conducted by 53 respondents(see Table 4). Student evaluations asked for student demographics and rankings on how well the telecourse met the student's needs. For the evaluations labeled "other" on Table 4, one was for faculty at an institution which produces telecourses to evaluate the need to produce a telecourse and one was to evaluate coordinators who provide support to distance educators at an institution.

Table 4

Types of Evaluations Currently Used by Respondents

Type of Evaluation	1st Rd. (%) n=178	2nd Rd. (%) n=112
Telecourse Pre-adoption	1.1	2.9
Student	29.8	27.7
Other	1.1	2.7
None	68.0	68.9

Scoring. Scores are reported for the group of 112 respondents who took part in both rounds of the questionnaire. Respondents ranked their knowledge and the importance of the statement to an evaluation on a scale of one (low) to four (high); the means for these scores are reported separately. An average group self-rating for each statement was obtained for knowledge and importance by dividing the sum of the individual ratings by the number of subjects in the group (Dalkey, 1969b).

This result is a numerical index for each statement representing the relative amount of knowledge the group felt that it had about the statement or the relative amount of importance the group attached to the statement (Dalkey, 1969b). Both are valid indicators of the mean accuracy of group responses (Dalkey, 1969b).

Knowledge and Importance Scores. Respondents ranked their knowledge of the statement and the importance of the statement from one (low) to four (high) (Dalkey, 1969b).

Interquartile Deviation Statistic - QD. Given iteration with feedback, the group should exhibit convergence of opinion toward consensus. Individual judgments should be reasonably influenced by the group feedback so that individual responses shift toward the group response and reduction in group variability occurs. This is reflected in the interquartile deviation (QD) Q_2, the standard deviation of the middle 50 percent of responses on one statement. This is a valid indicator of the mean accuracy of group responses and gives an indication of how widely the scores differed from one another (Dalkey, 1969b). QD is a better measure of dispersion than the range because it encompasses only the middle half of the series (Clark & Clark, 1983).

The objective is to narrow the interquartile range without pressuring the respondents to the extent that deviant opinion would no longer be allowed (Makridakis, et al., 1983). The interquartile range for both rounds is 56 respondents. Conditions for assuming that group judgment is operating include high subgroup agreement, and change and convergence on iteration with feedback as reported by the QD (Dalkey, 1971b). The QD is indicative of gross movement and does not imply statistical significance.

Expert Subgroup. Those respondents ranking their knowledge at four, "quite sure" of their response to a statement, composed an expert subgroup for that statement (Dalkey, 1969b). Two conditions are imposed on the selection of subgroups to increase accuracy; the difference in average self-rating between the subgroups should be one rank on a scale of one to four, and the size of subgroups should be substantial for both higher and lower ratings subgroups so that a maximum of 75 percent (84 respondents) ranked themselves in the lower three knowledge scores

and a minimum of 25 percent (28 respondents) ranked themselves at the highest score (Dalkey, 1969b) .

Consensus. For the first round, consensus was deemed to occur if 50 percent of the 112 respondents who took part in both rounds rated the statement at four for "very important. If the score was below 50 percent, the expert subgroup score was taken to deem consensus at 50 percent. All of the first round statements had consensus.

For the second round, the median of all of the expert percentage scores was 80 percent; this average score was used to set consensus for acceptance of the individual statements. If the expert importance score was at 80 percent or above, the statement was retained; if below 80 percent, the statement was deleted.

Pre-Adoption Telecourse Instrument

Two rounds of the survey instrument were mailed. Table 5 contains the first and second round statements to provide a structure for the individual discussions of each statement. In a Delphi study, the researcher and the respondents may generate statements (Brown, 1968; Sackman, 1974; Harman, 1975). The first instrument was based upon the review of literature and contained a representative group of 23 questions (Brown, 1968; Dalkey, 1969a, 1971b, Sackman, 1974). Respondents were asked to make comments and to edit freely the representative group of questions so that the problem and its eventual solution were stated properly (Brown, 1968). Respondents were asked to suggest subsidiary questions whose answers would be helpful in formulating the solution so that the entire group could consider a statement's importance to the solution (Brown, 1968; Sackman, 1974; Harman, 1975). They were asked to cite references upon which they based their suggestions (Brown, 1968).

The decision to incorporate these suggestions in the second round was based upon Patton's (1980) recommendations to solidify ideas which emerge from open ended experiences so that qualitative data can be statistically manipulated. In a Delphi study, the number of respondents requesting any type of revision or addition is not the prime concern; it is more important to tape the

information which even one respondent may be able to contribute to the solution of the problem (Brown, 1968; Dalkey, 1969a, 1971b).

Modifications were made if a number of conditions were met. The 23 first round statements were intended to represent the factors which the literature had suggested. As a result, many related ideas were contained in one statement. It was anticipated that respondents would suggest separating the statements because they would feel that the items were related, but too dissimilar for clarity in scoring. It was also anticipated that respondents would agree with one portion of a statement, but disagree with another portion. When respondents suggested a separation for these reasons, the statement was separated for the second round. As all elements had received consensus, nothing was removed; the element merely appeared in a rewritten statement (Brown, 1968; Sackman, 1974; Harman, 1975).

Wording changes were made if comments indicated that the intended meaning of the statement was not conveyed. The original passage in the literature was consulted to determine whether a suggested wording change merely clarified the statement or whether it changed the intent of the statement. Suggested wording changes were made only to clarify statements (Brown, 1968; Sackman, 1974; Harman, 1975).

It was expected that respondents would suggest many subsidiary statements. Statements were accepted and used in the second round if the basis for the statement was supported in the literature (Brown, 1968). In a Delphi study, it is typical to have a resource analyst to research the subsidiary questions and to pass the supplementary information to the respondents in the form of statements (Brown, 1968; Sackman, 1974; Harman, 1975). The researcher filled this function (Brown, 1968). References were not cited in the second round (Brown, 1968). As a result of these modifications and additions, the second instrument contained 72 questions based upon the feedback from respondents.

The format followed in the discussion is to state the original statement, report the decision to accept or reject the statement based upon the group and expert subgroup importance scores and briefly summarize the written feedback (Patton,1980). Scores are reported for the 112 respondents

who took part in both rounds. Scores for knowledge and importance are reported in tables following each section for the group and expert subgroup marking their scores at four. Tables show the percentage of respondents, interquartile deviation (QD), and the number of respondents. The group means for knowledge and importance scores are shown for the group and expert subgroup.

Table 5

Round 1 and Round 2 Statements

Round 1 (Minimal Content Statement)	Round 2 (Delphi Generated Statements Results of Round 1)	Retain/Delete
Educational Objectives Section		
1.Objectives state behavior, skills, attitudes, or interest changes which are achievable and measurable.		
	1. Objectives are stated for the telecourse and each component in cognitive, affective, and psychomotor statements appropriate for the content.	Retain
	2. Objectives for the telecourse and each component are at a level of difficulty appropriate for the content and learners.	Retain
	3. Objectives are achievable by the average learner; levels of achievement can be measured under specified conditions.	Retain
	4. The telecourse meets the objectives of learners for required or elective courses.	Retain
	5. Telecourse objectives and content are equivalent or similar to the on-campus course.	Retain
	6. The telecourse can be adapted to fit the on-campus equivalent.	Retain
Instructional Design Section		
2. Fully planned and logically organized.		
	7. The telecourse is fully planned and logically organized.	Retain
3. Components are coordinated and accomplish individual objectives for which they were designed.		
	8.Telecourse components are necessary, well coordinated and accomplish objectives for which they were designed.	Retain

Table 5 (Continued)

Instructional Design Section (continued)

Round 1 (minimal content statement)	Round 2 (Delphi generated statements)	Retain/Delete
4. Uses teaching strategies for adults and visual, auditory, tactile, and kinesthetic learning styles.		
	9. Uses teaching strategies appropriate for traditional and adult learners.	Retain
	10. Uses a variety of teaching strategies appropriate to the content which reach learners who prefer to learn through visual, auditory, tactile (hands-on) and kinesthetic (emotional experiences) methods.	Retain
5. Size, number, and pacing of lessons is correct for the subject and the content development rate.		
	11. Lesson size, number, pace, depth, and sequence is appropriate for the content, and learners.	Retain
6. All components evoke interaction by asking questions and stating correct answers.		
	12. Components encourage learner interaction with the content by posing challenging questions and providing answers when appropriate; through written assignments and other techniques which motivate learner participation.	Retain
	13. Components encourage critical viewing, reading and thinking.	Retain
7. Many visuals are used: photos, graphs, illustrations.		
	14. Appropriate visuals are used in each component which contribute to student learning	Retain
8. Language: understandable, well-phrased, readable.		

Table 5 (Continued)

Instructional Design Section (continued)

Round 1 (minimal content statement)	Round 2 (Delphi generated statements)	Retain/Delete
	15. Language is appropriate for content, learners, interesting, understandable, and similar throughout.	Retain
	16. Language in video component is effectively delivered, well-phrased, and easy to listen to.	Retain
	17. Language for print components is readable.	Retain
9. Uses self-directed learning contracts to involve learners in what, how, when and verification of what they learn.		
	18. Encourages self-directed learning.	Retain
	19. Encourages the use of self-directed learning. contracts to involve adult learners in planning learning objectives, identifying learning resources, setting deadlines, and identifying how to verify that the content has been learned and objectives accomplished.	Delete
10. Assignments are specific to content and distance learning; there is a balance of experiential and passive learning appropriate for adults.		
	20. Assignments are appropriate for learners and content.	Retain
	21. Assignments are of interest to learners and are balanced between viewing, reading, experiential, and interactive activities appropriate for distance learning.	Retain
Content Section		
11. Accurate, clear; usable for five years.		
	22. Content is appropriate to course title, description, and credit hours.	Retain
	23. Content is accurate, clear, comprehensive, balanced, current, and well-documented.	Retain

Table 5 (continued)

Content Section (continued)

Round 1 (minimal content statement)	Round 2 (Delphi generated statements)	Retain/Delete
	24. Content and visual elements (clothing, etc.) which will become outdated quickly are avoided.	Delete
	25. For content in a rapidly changing field, the telecourse will be usable for two years (minimum).	Delete
	26. For content in a stable field, the telecourse will be usable for three years (minimum).	Delete
	27. Print components will be usable for two years (minimum).	Delete
Textbook Section		
12. Written for the telecourse or correlates well with it.		
	28. Designed and written for the telecourse or correlates well with it; textbook revisions match video revisions.	Retain
	29. Facilitates student comprehension through language and pace appropriate for the course and learners.	Retain
	30. Textbook is widely used; if not a classic, it is current.	Delete
	31. The cost is reasonable for students.	Retain
	32. Available from the publisher at the scheduled time.	Retain
Faculty Guide Section		
13. Has segments on objectives, instructional design, adult teaching strategies, self-directed learning, telecourse components, lesson outline, and tests.		
	33. Contains segments for new faculty, responsibilities, objectives for the telecourse and each component, instructional design, lesson outlines, a variety of assignments which encourage involvement and optional syllabi for different texts, settings, and semester lengths.	Retain

Table 5 (Continued)

Faculty Guide Section (continued)

Round 1 (minimal content statement)	Round 2 (Delphi generated statements)	Retain/Delete
	34. Contains segments about distance learning, learning from TV, self-directed learning, and student isolation.	Delete
	35. Contains teaching strategies appropriate for content for traditional and adult learners, student level, student needs, and strategies for use for seminars, telephone meetings, letters to student, grading, and other forms of instructor feedback to distance learners.	Retain
	36. Test bank has clearly stated objective and essay questions relevant to objectives and content: includes questions on video, text and other components; test keys; location of answers in content; and test validity .	Retain
	37. Test formats are appropriate for at home tests, proctored testing, and computer grading.	Retain
	38. Updated if textbook or video has been revised.	Retain
	39. The format allows changes by the user institution.	Retain
Student Study Guide Section		
14. Ties telecourse components together for students.		
	40. Contains segments on objectives, components, lesson outlines, video outlines, glossary, key concepts references, exercises, self-tests with explanations, self-directed learning strategies, and activities to pursue personal interests appropriate for the content.	Retain
	41. Contributes to the learner achieving objectives by serving as the student's personal tutor and directing learning from the components.	Retain
	42. The cost is appropriate for students.	Retain
	43. The format allows changes by the user institution.	Retain

Table 5 (continued)

Round 1 (minimal content statement)	Round 2 (Delphi generated statements)	Retain/Delete
	Computer Software Section	
15. Many versions; site and home license available.		
	44. Appropriate to content and contributes to achieving educational objectives.	Retain
	45. Versions and documentation available for most campus and student computer systems (IBM, Apple, Macintosh).	Retain
	46. Appropriate to the students computer literacy, user friendly, and error free.	Retain
	47. Site and home licensing is available.	Retain
	48. Cost is appropriate for the institution and students.	Retain
	Video Section	
16. Broadcast quality and length (30, 60, 90 minutes).		
	49. The video technical quality should meet professional broadcast quality standards.	Retain
	50. The video technical quality should meet quality standards appropriate to the delivery method (cable, ITFS, broadcast, learning center, etc.).	Retain
	51.Program length fits standard periods such as 30 30 or 60 minutes (as opposed to 19 minutes or 47 minutes which do not fit 30-minute programming periods).	Retain
	52. Individual programs should be 30 minutes long.	Delete
	53. Individual programs should be 60 minutes long.	Delete
	54. A total of 15 hours of video programming is ideal.	Delete
17. Situational humor; believable plot and dialogue.		
	55. Treatment is appropriate to content: documentary, lecture, discussion, panel, drama, humor, etc. and does not exclusively use a lecture or "talking head" format.	Retain
	56. The dialogue is believable.	Retain

Table 5 (continued)

Video Section (continued)

Round 1 (minimal content statement)	Round 2 (Delphi generated statements)	Retain/Delete
18. The same message is given in words and video.		
	57. The television program gives the same message in spoken words and video.	Retain
19. Experiments are conducted in real settings to give content which students would not usually get.		
	58. Enriches learning with real-life application of theoretical content by conducting video experiments and demonstrations in realistic settings (industrial laboratory, office etc.) or video field trips to realistic locations (museums, factories, clinics, etc.).	Retain
20. Video advances content through imaginative camera shots, lighting, color, motion, and digital effects which provide pace and smooth transition.		
	59. Video advances content understanding by providing appropriate pace.	Retain
	60. Production values are high so that the production becomes invisible; production values include appropriate camera shots, good lighting, color balance, motion sequences, special/digital effects appropriately used, consistently good level of audio, and clean editing.	Retain
21. Imaginatively uses verbal and non-verbal sound to advance content; adds variety and pace; music is not continuous.		
	61. Imaginatively uses voice and sound to advance content.	Retain
	62. Sound adds appropriate variety and sets pace.	Delete

Table 5 (continued)

Round 1 (minimal content statement)	Round 2 (Delphi generated statements)	Retain/Delete
	Video Section (continued)	
22. Instructors, experts, and characters are competent presenters or actors who convey enthusiasm, and do not lecture or preach.		
	63. Instructor(s) is a skillful presenter with content expertise who communicates a sincere enthusiasm for the subject.	Retain
	64. Experts are nationally recognized or acknowledged leaders in the field.	Delete
	65. Actors are competent in their craft.	Retain
	Cost Section	
23. Compares favorably to other programs on the same subject.		
	66. The cost is appropriate for the available funding.	Retain
	67. Target learners and enrollment potential can be identified.	Retain
	68. Profit projection and date when profit will be realized can be projected.	Delete
	69. Cost effectiveness can be compared to other telecourses on the same subject.	Delete
	70. The licensing contract is appropriate for the institution's delivery methods and length of use.	Retain
	71. Tapes are easily accessible for duplication and are in excellent condition.	Retain
	72. Marketing concepts and materials are included.	Delete

Round 1

All scores are reported for the 112 respondents who took part in both rounds.

Educational Objectives Section. Scores for this section are shown in Table 6.

1. Objectives state behavior, skills, attitudes, or interest changes which are achievable and measurable. The statement was retained; importance scores were 80 percent for the group and 90 percent for experts. There were 38 written responses.

Four respondents suggests that the objective should be stated for the overall telecourse (Lundgren, et al., 1972, Armstrong, 1973; NEA,1976), and for each component (Sive, 1983). As both were supported in the literature the terms “telecourse” and “component” were added to the two second round statements which dealt with overall objectives (round 2, statements 1 and 2).

Seven respondents objected to the words "behavior, skills, attitudes, or interest changes" (Brown, 1964) and suggested using the words "cognitive, affective, and psychomotor" which was supported in the literature by Sive (1978). This statement was rewritten and appeared in the second round as statement 1.

Two respondents suggested that objectives should be at a level of difficulty appropriate to students. This was supported in the literature by Brown (1964), Erickson (1968), Lesser, et al., (1972), Armstrong (1973), Bergeson (1976), and Sive (1983). It was shown as subsidiary statement 2 in the second round.

Three respondents suggested that the objectives should be achievable by the average learner. This was supported in the literature by Bruner (1960), Schramm, et al., (1967), Erickson (1968), Lesser, et al., (1972), Armstrong (1973), EPIE (1973), Bergeson (1976), NEA (1976), and Sive (1983), and was added to statement 3 in the second round. One respondent suggested that objectives should be measurable under specified conditions which was supported in the literature by Lundgren, et al., (1972), Bates (1975a), Brown (1977). The statement was rewritten and appeared as statement 3 in the second round.

Two respondents suggested adding a subsidiary statement regarding whether the telecourse met student needs for required or elective courses. This was supported in the literature (Myers,1972; NEA, 1976; Levine,1987) and was shown as subsidiary statement 4 in the second round.

Ten respondents suggested a subsidiary statement about the telecourse objectives and content being equivalent or similar to the on-campus course. This was supported in the literature by Zigerell (1986) and Levine (1987). It was shown as subsidiary statement 5 in the second round.

Three respondents suggested a subsidiary statement about adapting the telecourse to the on-campus course. This was supported in the literature by Sive (1983), Zigerell (1986), and Levine (1987). It was shown as subsidiary statement 6 in the second round.

Other comments included one respondent's note that some courses have no target population and another who noted that one course cannot meet all student needs.

Summary of the Educational Objectives Section: In the second round, the educational objectives section contained six statements, two of which had been revised from the original round 1, statement 1, and four which were added as subsidiary statements. Six statements were used to ensure accurate scoring (see Table 5) about the importance of each to an evaluation. The original statement could no longer accommodate all the concerns which respondents raised.

Table 6

Round 1 Scores for the Educational Objectives Section

1. Objectives state behavior, skills		Group				Expert			
attitudes, or interest changes which	Scale	Mean	%	QD	n	Mean	%	QD	n
are achievable and measurable.	Knowledge	3.5	56.4	.489	62	4.0	100.0	.000	62
	Importance	3.8	80.4	.000	90	3.9	90.5	.000	56

Instructional Design Section. Scores for this section are shown in Table 7.

2. The telecourse is fully planned (Erickson, 1972) and logically organized (Erickson, 1972; Bates, 1975a). The statement was retained: importance scores were 85 percent for the group and 96 percent for experts. Of the three comments to the statement, one noted that some adopters may need help in knowing what instructional design is; one suggested clarifying the statement by adding the

word "telecourse" which was done in the second round; and a third suggested adding "appropriate to target audience" which had been done in an educational objectives statement (see Table 5, Round 2, Statement 2). The statement appeared in the second round as statement 7.

3. Components are coordinated (Bates, 1975a, 1980) and accomplish individual objectives for which they were designed (Lesser, et al., 1972; Sive, 1983). The statement was retained; importance scores were 83 percent for the group and 93 percent for experts. Two remarks suggested that to clarify the statement, the word "well" should be added to "coordinated," and that the word "individual" was redundant. These wording changes were made in the second round to clarify the statement. A third respondent suggested adding that components are necessary which was supported in the literature by Sive (1983) and was added. The statement was rewritten and appeared as statement 8 in the second round (see Table 5).

4. Uses teaching strategies for adults (Matsui, 1981; Knowles, 1983) and visual, auditory, tactile, and kinesthetic learning styles (Boucher, et al., 1973; EPIE, 1973; NEA, 1976; DeNike & Stroether, 1976; Bergeson, 1976; Meierhenry, 1981; Reiser & Gagne, 1983; Bates, 1987a). The statement was retained; importance scores were 43 percent for the group and 74 percent for experts. There were 17 comments.

Eleven respondents suggested that in the second round adult teaching strategies (Knowles, 1983; Matsui, 1981) should be separated from visual, auditory, tactile, and kinesthetic learning styles (Boucher, et al., 1973; EPIE, 1973; NEA, 1976; DeNike & Stroether, 1976; Bergeson, 1976; Meierhenry, 1981; Reiser & Gagne, 1983; Bates, 1987a). Two respondents suggested adding the words " traditional students" to the statement because their student base included this group (NEA, 1976; USDE, 1987). Three respondents suggested adding definitions to the sensory learning styles (Boucher, et al., 1973; EPIE, 1973; NEA, 1976; DeNike & Stroether, 1976; Bergeson, 1976; Meierhenry, 1981; Reiser & Gagne, 1983; Bates, 1987a) to clarify the meaning. These suggestions were supported in the literature and the revisions were made in the second round so that scoring would be accurate (see Table 5). The rewritten statements were shown as 9 and 10 in the second round.

One respondent noted that this is the role of the instructor, not the course.

5. Size (Bates, 1975a; Schoch, 1983; Wong & Wong, 1978-79; Curtis, 1989), number (Armstrong, 1973; Sive, 1983), and pacing of lessons is correct (Diamond, 1964; Sive, 1983) for the subject and the content development rate (Lesser, et al., 1972, Armstrong, et al., 1985; Menmuir, 1982; Ladd, 1989). The statement was retained; importance scores were 71 percent for the group and 96 percent for experts. Of the 11 comments, three asked for clarification on "content development rate" (Lesser, et al., 1972, Armstrong, et al., 1985; Menmuir, 1982; Ladd, 1989). The phrase was removed as the word "pace" adequately reflected the meaning. Others suggested adding the words "depth" (Armstrong, 1973), "sequence," (Armstrong, 1973, Bates, 1987a) and "appropriate" (Armstrong, 1973) to the statement which was done in the second round (see Table 5). Other respondents noted that some series do not have enough lessons. The statement was rewritten and appeared as statement 11 in the second round.

6. All components evoke interaction by asking questions and stating correct answers (Bruner, 1960; Schramm, et al., 1972; Boucher, et al., 1973; Haney & Ullmer, 1975; Sive, 1978, 1983; Knowles, 1983; Bates, 1987b; Curtis, 1989). The statement was retained; importance scores were 40 percent for the group and 66 percent for experts. Of the 14 comments, five remarks requested deletion of the word "all" which was done in the second round for clarity. Six remarks suggested ways that components can encourage learner interaction; by posing challenging questions and providing answers when appropriate (Boucher, et al, 1973; Knowles, 1983; Curtis,1989); through written assignments and other techniques which motivate learner participation (Bruner, 1960; Schramm, et al., 1967; Lesser, et al., 1972; Haney & Ullmer, 1975; Sive, 1978, 1983; Bates, 1987b; Curtis, 1989). These were added to the second round statement (see Table 5). One respondent asked "How do you evaluate interaction if it is a 'canned' course?" The statement was rewritten and appeared in the second round as statement 12.

Two respondents suggested adding that components should encourage critical viewing (Gueulette, 1980), reading (Bates, 1975a, 1987b), and thinking (Lundgren, et al, 1972). As the

suggestion was supported in the literature, it was added as subsidiary statement 13 in the second round.

7. Many visuals are used: photos, graphs, illustrations (Tosti & Ball, 1969; Bretz, 1971; Romiszowski, 1974; Branson, et al.,1975; Anderson, 1976; Kemp, 1980; Northcott & Holt, 1986). The statement was retained; importance scores were 54 percent for the group and 72 percent for experts. There were 12 remarks; five suggested changing the word "many" to "appropriate" (DeNike & Stroether, 1976) and deleting "photos, graphs, illustrations " which was done in the second round. One respondent suggested adding that visuals contribute to the instruction (Reiser & Gagne, 1983) which was supported in the literature and added to the second round. Three respondents asked for clarification; one felt it was a redundant question for a telecourse and two asked if this meant text or video. In the second round, the phrase "are used in each component" was added to clarify the statement. One suggested that this was the instructor's role and another suggested that visuals should only be used when appropriate as they too often detract from the instruction (see Table 5). The statement was rewritten for the second round and appeared as statement 14.

8. Language: understandable, well-phrased, readable (Tosti & Ball, 1969; Bretz, 1971; Lesser, et al., 1972; Romiszowski, 1974; Branson, et al.,1975; Gropper, 1976; Anderson 1976; Gagne & Briggs, 1979; Kemp, 1980; Briggs & Wager, 1981; Northcott & Holt, 1986). The statement was retained; importance scores were 89 percent for the group and 98 percent for experts. Ten remarks were made. For the general statement one respondent suggested adding "interesting" (NEA, 1976; Finkel, 1982; Bonani, 1982; Curtis, 1989) and one suggested "similar throughout" (Northcott & Holt, 1986); one suggested “appropriate for content” (Lesser, et al., 1972; AASL, 1976; Brown, 1977; Brown, et al., 1972; EPIE, 1973; Sive, 1983) and learners (Niemi, 1971; Myers, 1972; Bates, 1975a). As these suggestions were supported in the literature, the statement was rewritten and appeared in the second round as statement 15.

Two respondents suggested separating language used in the video programs (Lundgren, et al., 1972) from the other components which was done in the second round as it was supported in the literature (Lundgren, et al., 1972; Weingartner, 1974; Bates, 1975a, 1987a; Blythe & Sweet, 1979;

Curtis, 1989). Two remarks suggested adding that video language be delivered effectively (Lundgren, et al., 1972; Curtis; 1989) and easy to listen to (Lesser, et al., 1972; Merrill & Goodman, 1972; Curtis, 1989) which were supported in the literature. The second round included a subsidiary statement on language in the video component which appeared as statement 16.

The remaining original segment of statement 8 regarding print readability (Tosti & Ball, 1969; Bretz, 1971; Lesser, et al., 1972; Romiszowski, 1974; Branson, et al.,1975; Gropper, 1976; Anderson 1976; Gagne & Briggs, 1979; Kemp, 1980; Briggs & Wager, 1981; Northcott & Holt, 1986) was rewritten and appeared in the second round as statement 17 (see Table 5).

9. Uses self-directed learning contracts to involve learners in what, how, when and verification of what they learn (Knowles, 1983). The statement was retained; importance scores were 36 percent for the group and 65 percent for experts. The statement was separated into two statements for the second round to determine if there was a difference in scores between self directed learning and learning contracts as two statements suggested deleting learning contracts. Responses to this statement pointed out that "a value judgment is being imposed with this question." Others noted that many educators are not familiar with learning contracts and that a more lengthy definition was needed. Another asked if contracts are appropriate for every type of telecourse? One suggested that it was not easily done on television. One observed that this is a "good idea but rarely 'policy'" but should be an option for the instructor; one felt it was the college's responsibility. One stated, "I do know from previous experience - it works!" For the second round, the self-directed learning (Knowles, 1983) segment was rewritten and appeared as statement 18.

The use of self-directed learning contracts was rewritten for the second round as statement 19 and was clarified by adding an outline of how learning contracts work (Knowles, 1983) (see Table 5).

10. Assignments are specific to content (Knowles, 1983) and distance learning (Bates, 1975a; Levine, 1987); there is a balance of experiential and passive learning appropriate for adults (Knowles, 1983). The statement was retained; importance scores were 63 percent for the group and 90 percent for experts. Nine statements suggested separating the statement into two statements for clarification which was done in the second round. Three respondents suggested that assignments should be of

interest to learners which was supported in the literature (Myers, 1972; Niemi, 1971; Bates, 1975a) and added to the second portion. The assignment portion was rewritten as statement 20 in the second round; the balance portion was rewritten as statement 21. Two respondents objected to the exclusive use of the word "adults" (Knowles, 1983) based upon their traditionally aged student base (USDE, 1987) so that the word "learners" was used in the second round (see Table 5).

Summary of the Instructional Design Section: The first round instructional design section contained 9 statements. For the second round, one statement remained the same, eight were separated and rewritten as 12 statements, and one subsidiary statement was added.

Table 7

Round 1 Scores for the Instructional Design Section

		Group				Expert			
2. Fully planned and logically organized.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	63.4	.426	72	4.0	100.0	.00072	
	Importance	3.9	85.7	.000	96	4.0	95.8	.00070	
3. Components are coordinated and	Scale	Mean	%	QD	n	Mean	%	QD	n
accomplish individual objectives	Knowledge	3.5	55.4	.493	64	4.0	100.0	.00064	
for which they were designed.	Importance	3.8	83.9	.000	94	4.0	93.8	.00060	
4. Uses teaching strategies for adults	Scale	Mean	%	QD	n	Mean	%	QD	n
and visual, auditory, tactile, and	Knowledge	3.2	40.2	.464	46	4.0	100.0	.00046	
and kinesthetic learning styles.	Importance	3.3	43.6	.489	49	3.7	73.9	.00034	
5. Size, number, and pacing of lessons	Scale	Mean	%	QD	n	Mean	%	QD	n
is correct for the subject and the	Knowledge	3.3	49.1	.504	56	4.0	100.0	.00056	
content development rate.	Importance	3.7	71.5	.288	79	4.0	96.4	.00053	
6. All components evoke interaction by	Scale	Mean	%	QD	n	Mean	%	QD	n
asking questions and stating correct	Knowledge	3.3	48.2	.503	55	4.0	100.0	.00055	
answers.	Importance	3.3	40.2	.464	45	3.6	66.1	.39537	
7. Many visuals are used: photos,	Scale	Mean	%	QD	n	Mean	%	QD	n
graphs, illustrations.	Knowledge	3.5	59.8	.464	66	4.0	100.0	.00066	
	Importance	3.4	54.5	.496	61	3.6	72.7	.00048	
8. Language: understandable,	Scale	Mean	%	QD	n	Mean	%	QD	n
well-phrased, readable.	Knowledge	3.7	75.0	.000	84	4.0	100.0	.00084	
	Importance	3.9	89.3	.000	100	4.0	98.8	.00084	
9. Uses self-directed learning contracts	Scale	Mean	%	QD	n	Mean	%	QD	n
to involve learners in what, how, when	Knowledge	3.1	36.6	.483	40	4.0	100.0	.00040	
and verification of what they learn.	Importance	3.1	36.6	.483	41	3.6	65.0	.23526	
10. Assignments are specific to content									
and distance learning; there is a balance	Scale	Mean	%	QD	n	Mean	%	QD	n
of experiential and passive learning	Knowledge	3.3	44.6	.493	51	4.0	100.0	.00051	
appropriate for adults.	Importance	3.6	63.4	.426	71	3.8	90.2	.00046	

Content Section. Scores for this section are shown in Table 8.

11. Accurate (Erickson, 1972; AASL, 1976), clear (Brune, 1960; Schramm, et al., 1967; Lesser, et al., 1972); usable for five years (Sive, 1983; Curtis, 1989). The statement was retained; importance scores were 65 percent for the group and 84 percent for experts.

Three respondents suggested that a subsidiary statement should be added regarding the appropriateness of the telecourse content to course title, description, and credit hours. This was supported in the literature (Brown, et al., 1972; Armstrong, 1973; Bates, 1985a, 1987a; Levine, 1987). It appeared in round two as statement 22.

Five responses suggested separating "accurate (Erickson, 1972; AASL, 1976) and clear" (Lesser, et al., 1972) from the length of years (Sive, 1983; Curtis, 1989), which was done in the second round. Three respondents suggested adding “comprehensive” (Armstrong, 1973) and “balanced” (Erickson, 1972; EPIE, 1973; NEA, 1976; AASL, 1976) to the statement. Three respondents suggested adding “current” (AASC, 1976; NEA, 1976; Sive, 1983) to the statement. Two respondents suggested adding “well-documented” to the statement (Armstrong, 1973). These suggestions were all supported in the literature and the statement was rewritten for the second round as statement 23.

Two respondents suggested screening materials for content and visual elements (clothing, etc.) which would become outdated quickly (AASC, 1976; NEA, 1976). As the suggestion was supported in the literature, it was added as subsidiary statement 24 in the second round.

Forty-eight respondents wrote remarks concerning the shelf life of a telecourse. The suggestions ranged from two (Sive 1983) to six years (Sive 1983) as well as whether the content was based in a rapidly changing or stable field (AASC, 1976). As these suggestions were supported in the literature, four new statements appeared in the second round (statements 24, 25, 26, and 27) to determine if there was consensus on any aspect of print or video shelf life (see Table 5).

One respondent noted that time is not essential if a telecourse resolves an immediate need.

Summary of the Content Section: The round one content statement appeared as six statement in the second round. One subsidiary statement was added and five statements were rewritten from the content of the original statement.

Table 8

Round 1 Scores for the Content Section

11. Accurate, clear; usable for five years.		Group				Expert			
	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	58.0	.478	65	4.0	100.0	.00065	
	Importance	3.5	65.2	.401	73	3.8	84.6	.00055	

Textbook Section. Scores for this section are shown in Table 9.

12. Written for the telecourse or correlates well with it (Bates, 1975a; Levine, 1987). The statement was retained; importance scores were 80 percent for the group and 95 percent for experts. There were 24 responses.

Three respondents stated that revisions should match video revision (Bates, 1975; Levine, 1987). This was added to the original statement and it appeared in the second round as subsidiary statement 28.

Seven respondents stated that the textbook should aid student comprehension (Stoffel, 1987) through language (Northcott & Holt, 1986) and at a pace appropriate for the course and learners (Levine, 1987). As these suggestions were supported in the literature, they were added as subsidiary statement 29 in the second round.

Three respondents stated that the textbook should be widely used (Levine, 1987), a classic in the field (Brey, 1988), or current (Levine, 1987). As these suggestions were supported in the literature, they were added as subsidiary statement 30 in the second round.

Four respondents stated that the cost should be reasonable for students (Reiser, 1981). As the suggestion was supported in the literature, it was added as subsidiary statement 31 in the second round.

Two respondents stated that the textbook must be available on time from the publisher (Levine, 1987). As this suggestion was supported in the literature, it was added as a subsidiary statement 32 in the second round.

Summary of the Textbook Section: Since all of these statements were supported in the literature, they were added to the second round statements as five statements so that scores would accurately reflect their important to an evaluation (see Table 5). There were four subsidiary statements added to the second round and the original statement was rewritten.

Table 9

Round 1 Scores for the Textbook Section

12. Written for the telecourse or correlates well with it.		Group				Expert			
	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	62.5	.437	70	4.0	100.0	.00070	
	Importance	3.7	80.4	.000	90	3.9	95.7	.00067	

Faculty Guide Section. Scores for this section are shown in Table 10.

13. Has segments on objectives (Levine, 1987), instructional design (Dirr, 1986; Levine, 1987), adult teaching strategies (Matsui, 1981; Levine, 1987), self-directed learning (Salomon, 1983), telecourse components (Dirr, 1986), lesson outline (Dirr, 1986; Levine, 1987), and tests (Levine, 1987). The statement was retained; importance scores were 76 percent for the group and 90 percent for experts. There were 29 responses to this statement.

Two respondents recommended separating the statement to get scores for each portion. Based upon respondent requests, segments were added for new faculty (Levine, 1987), responsibilities (Levine, 1987), assignments to encourage involvement (Levine, 1987), optional syllabi for different texts, settings, and semester lengths (Levine, 1987). Since all suggestions were supported in the literature, the statement was rewritten and appeared as statement 33 in the second round.

A subsidiary statement based upon suggestions by four respondents was added. It included segments about distance learning (Rekkedal, 1982), learning from television (Lesser, et al, 1972), self-directed learning (Knowles, 1983), and student isolation (Finkel, 1982). As all suggestions were supported in the literature, a subsidiary statement was written and it appeared in the second round as statement 34.

A subsidiary statement was added based upon remarks by five respondents. Suggestions included added teaching strategies appropriate for learners (Levine, 1987) and strategies for use with distance learners (Finkel,1982) such as seminars, telephone meetings, letters to students, grading, and other forms of instructor feedback to distance learners (Finkel, 1982). As all suggestions were supported in the literature, the subsidiary statement was added in the second round as statement 35.

Based upon remarks by five respondents, a fuller statement about testing was rewritten for the second round. Suggestions included that the test bank should contain clearly stated objective and essay questions (Levine, 1987) relevant to objectives and content (Diamond, 1964) cover all components (Diamond, 1964; Bates, 1975b), test keys and location of answers in the content (Northcott & Holt, 1986), and test validity (Northcott & Holt, 1986). As these were all supported in the literature, the statement was rewritten and appeared in the second round as statement 36.

Based upon remarks by two respondents, a fuller statement was added to the second round regarding test formats appropriate for at home tests, proctored testing (Diamond, 1964), and computer grading (Northcott & Holt, 1986). As these suggestions were supported, they were rewritten for the second round as statement 37.

Based upon remarks by two respondents, a subsidiary statement was added regarding the revision of the faculty guide if the textbook or video had been revised (Sive, 1983). As it was supported in the literature, it appeared in the second round as subsidiary statement 38.

Based upon remarks by seven respondents, a subsidiary statement was added regarding changes to the faculty guide which could be made by the user institution; this was supported in the literature by Zigerell (1986). It appeared in the second round as subsidiary statement 39.

Summary of the Faculty Guide Section: The original round one faculty guide statement appeared in the second round as seven statements. Five of the statements were fuller explanations of material contained in the original statement. Two subsidiary statements were added. Responses were rewritten for the second round so that scores would accurately reflect the

importance of each to an evaluation. The range of concerns could not be accommodated in one question (see Table 5). All revisions were supported in the literature.

Table 10

Round 1 Scores for the Faculty Guide Section

13. Has segments on objectives, instructional design, adult teaching strategies, self-directed learning, telecourse components, lesson outline, and tests.	Scale	Group Mean	Group %	Group QD	Group n	Expert Mean	Expert %	Expert QD	Expert n
	Knowledge	3.6	68.8	.334	77	4.0	100.0	.00077	
	Importance	3.7	76.8	.000	86	3.9	90.9	.00070	

Student Study Guide Section. Scores for this section are shown in Table 11.

14. Ties telecourse components together for students (Quinn & Adams, 1989). The statement was retained; importance scores were 83 percent for the group and 96 percent for experts. There were 20 remarks.

Fifteen respondents suggested additions to the statement. Suggestions included adding segments on objectives, components, lesson outlines, video outlines, glossary, key concepts, references, exercises, self-tests with explanations (Levine, 1987), self-directed learning strategies (Knowles, 1983; Salomon, 1983), and activities to pursue personal interests appropriate for the content (Quinn & Adams, 1989). As all of the suggestions were supported in the literature. The statement appeared in the second round as subsidiary statement 40.

Four respondents suggested that the statement should be rewritten to reflect that the study guide should contribute to the learner achieving objectives by serving as the student's personal tutor and directing learning from the components. This suggestion was supported in the literature by Bates (1975b) and Quinn and Adams (1989). The statement was rewritten and appeared in the second round as statement 41.

Three respondents stated that cost should be appropriate for students which was supported in the literature by Reiser (1981). It appeared in the second round as subsidiary statement 42.

One remark stated that the student study guide's format should allow changes by the user institution (Quinn & Adams, 1984; Levine, 1987). As this was supported in the literature, it was added to the second round as subsidiary statement 43 (see Table 5).

Summary of the Study Guide Section: For the second round, the study guide section contained four statements. All revisions were supported in the literature. Three subsidiary statements were added and the original statement was rewritten. The section required four statements so that respondents could accurately score each as to its importance to an evaluation.

Table 11

Round 1 Scores for the Study Guide Section

14. Ties telecourse components		Group				Expert			
together for students.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.7	71.4	.260	80	4.0	100.0	.00080	
	Importance	3.8	83.9	.000	94	4.0	96.2	.00077	

Computer Software Section. Scores for this section are shown in Table 12

15. Many versions; site and home license available (Dirr, 1986). The statement was retained; importance scores were 39 percent for the group and 79 percent for experts. There were 35 remarks.

Five respondents suggested that the software should be appropriate to content and contribute to achieving educational objectives. This was supported in the literature (Dirr,1986; Bates, 1987b) and was added as subsidiary statement 44 in the second round.

Six respondents recommended that versions and documentation should be available for most campus and student computer systems and specifically recommended IBM, Apple, and Macintosh brand versions (Dirr, 1986; Levine, 1987; Brey, 1988). As this was supported in the literature, it was rewritten for the second round and appeared as statement 45.

Eleven respondents suggested that the software should be appropriate to the students' computer literacy, user friendly, and error free (Bretz, 1971; Dirr, 1986). It was supported in the literature and appeared in the second round as subsidiary statement 46.

One respondent suggested separating the phrase concerning site and home licensing from the original statement (Dirr, 1986). This was done in the second round because the other suggestions made by respondents which were accepted required more than one statement to accommodate all of the concerns. The licensing (Dirr, 1986) portion of the original statement appeared as statement 47 in the second round.

Three respondents wrote remarks which suggested that cost should be appropriate for the institution and students. This was supported by Reiser (1981) and was added as subsidiary statement 48 in the second round (see Table 5).

Summary of the Computer Software Section: The original statement was rewritten as two statements for the second round. Three subsidiary statements were added. Five statements were required because the content of each statement was was sufficiently dissimilar from the others that it would be difficult to score accurately. All revisions were supported in the literature.

Table 12

Round 1 Scores for the Computer Software Section

15. Many versions; site and home license available.	Group					Expert			
	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	2.9	38.4	.751	43	4.0	100.0	.00043	
	Importance	3.1	39.3	.563	44	3.7	79.1	.20834	

Video Section. Scores for this section are shown in Table 13.

16. Broadcast quality and length (30, 60, 90 minutes) (Erickson, 1968; Dirr, 1986; Bates 1987a; Brey, 1988). The statement was retained; importance scores were 61 percent for the group and 79 percent for experts. This statement elicited 28 responses.

Three respondents suggested separating the statement. This was done in the second round because the range of concerns necessitated the separation.

Three respondents stated that the video technical quality should meet professional broadcast quality standards (Erickson, 1968; Dirr, 1986; Bates, 1987a). As this was the original intent of the

first round statement 16, it was retained, but the program times were removed (see discussion below). The statement was rewritten and appeared in the second round as statement 49.

Two respondents stated that the video technical quality should meet quality standards appropriate to the delivery method such as cable, ITFS, broadcast, learning center, etc., which was supported in the literature (AASL, 1976; Brey, 1988). The statement was added as subsidiary statement 50 in the second round.

Three respondents suggested that the program length should fit standard periods such as 30 or 60 minutes (Erickson, 1968; Dirr, 1986; Bates, 1987a). This was the portion of the original round one statement 16 which remained after it was separated. As it was supported in the literature, it was rewritten and appeared in the second round as statement 51.

Six respondents stated that individual programs should be 30 minutes long (Dirr, 1986). Four respondents stated that individual programs should be 60 minutes long (Dirr,1986). Three respondents stated that a total of 15 hours of video programming is ideal (Dirr, 1986). One respondent wrote that the video program length must equal traditional classroom hours to qualify granting three credit hours. He noted that according to their state laws, 15 hours of programming qualifies for only one credit hour; yet in other states the same course could be offered for three credit hours. As all lengths were supported in the literature and the range of respondents' remarks indicated a need for clarification, all three appeared in the second round as subsidiary statements 52, 53, and 54 respectively (see Table 5).

17. Situational humor (Lundgren, et al, 1972); believable plot (Curtis, 1989) and dialogue (Lesser, et al, 1972). The statement was retained; importance scores were 37 percent for the group and 68 percent for experts. There were seven remarks.

Two respondents suggested separating the statement as the phrases were too dissimilar. This was done in the second round by separating video treatment aspects from dialogue.

Three respondents objected to the use of humor in telecourses. One respondent felt that the statement should be rephrased as " Treatment is appropriate to content: documentary, lecture, discussion, panel, drama, humor (Curtis, 1989), etc.". The phrase "does not exclusively use a lecture

or 'talking head' format" (Lesser, et al, 1972; Bates, 1983; Salomon, 1983; Curtis, 1989) was added to the second round as two respondents noted that lecture is a treatment and not always controlled by the instructor. The statement was rewritten for the second round and appeared as statement 55 (see Table 5).

The portion of statement 17 dealing with dialogue (Lesser, et al, 1972) was rewritten and appeared in the second round as statement 56.

18. The same message is given in words and video (Schramm, et al., 1967; Salomon, 1983). The statement was retained; importance scores were 65 percent for the group and 80 percent for experts. There were ten responses; two suggested word changes to clarify the statement. In the second round the words "television program" and "spoken" (words) were added (see Table 5). No other changes were made. It appeared as statement 57 in round two.

19. Experiments are conducted in real settings to give content which students would not usually get (Lundgren, et al., 1972; Bates, 1974, 1983, 1987a). The statement was retained; importance scores were 66 percent for the group and 85 percent for experts. There were 15 remarks, eight of which asked for clarification. One remark suggested that the statement read "enriches learning with real-life application of theoretical content"; the statement was further clarified by adding "by conducting video experiments and demonstrations in realistic settings (industrial laboratory, office etc.) or video field trips to realistic locations (museums, factories, clinics, etc.) (Lundgren, et al, 1972) As the suggestions were supported in the literature, the statement was rewritten and appeared in the second round as statement 58 (see Table 5).

20. Video advances content (Lesser, et al., 1972) through imaginative camera shots, lighting, color, motion, and digital effects which provide pace and smooth transition (Lesser, et al., 1972; Salomon, 1983; Curtis, 1989). The statement was retained; importance scores were 58 percent for the group and 79 percent for the experts. There were eight remarks suggesting that video content pacing and production values should be separated. One respondent suggested that a phrase should be added saying that the production should be invisible (Lesser, et al, 1972). Other wording changes were suggested to clarify the statement. The statement was rewritten for the second round as

statements 59 and 60. One respondent suggested that the statement was too technical (see Table 5).

21. Imaginatively uses verbal and non-verbal sound to advance content (Lesser, et al., 1972; Lundgren, et al., 1972); adds variety and pace; music is not continuous (Curtis, 1989). The statement was retained; importance scores were 48 percent for the group and 72 percent for experts. There were 12 remarks; one respondent suggested separating the statement; two asked for clarification. Four respondents suggested deleting "continuous music" (Curtis, 1989). In the second round, the statement was separated so that sound content was separated from how sound was used as a production effect. “Continuous music” was rewritten as “appropriate” (Curtis, 1989) as this covered all types of music use and not just continuous use of music. The rewritten statements appeared as statements 61 and 62 (see Table 5).

22. Instructors, experts, and characters are competent presenters or actors who convey enthusiasm, and do not lecture or preach (Lesser, et al, 1972; Bates, 1983; Salomon, 1983; Curtis, 1989). The statement was retained; importance scores were 75 percent for the group and 88 percent for experts. There were 31 remarks; two suggested separating the three roles which was done in the second round; five suggested that lecture (Lesser, et al, 1972; Bates, 1983; Salomon, 1983; Curtis, 1989) is a format and not instructor controlled. As this was supported in the literature, the phrase was rewritten as part of statement 55 in the second round.

Three respondents suggested adding content expertise (Brown, 1964; Lundgren, et al, 1972) to the instructor's competencies. As this was supported in the literature, the statement was rewritten and appeared in the second round as statement 63.

Two respondents stated that experts should be acknowledged leaders in the field or nationally recognized (Levine, 1987). The remarks were supported in the literature and the statement was rewritten for the second round as statement 64.

The remaining portion of the original statement 22 concerned the competency of actors (Lesser, et al, 1972). This was rewritten and appeared in the second round as statement 65 (see Table 5).

Summary of the Video Section: There were seven statements in round one. One statement remained essentially unchanged in round two. Four subsidiary statements were added to round two.Six of the original statements were rewritten for the second round and appeared as 12 statements. All of the revisions and subsidiary statements were supported in the literature. The 17 round two statements were required as the concerns expressed by the respondents could no longer be accommodated in the original seven representative statements.So that scores would accurately reflect whether these were important considerations for an evaluation, the number of questions was increased.

Table 13

Round 1 Scores for the Video Section

		Group				Expert			
16. Broadcast quality and length	Scale	Mean	%	QD	n	Mean	%	QD	n
(30, 60, 90 minutes).	Knowledge	3.5	62.5	.437	71	4.0	100.0	.00071	
	Importance	3.6	61.6	.447	69	3.7	79.2	.00057	
17. Situational humor; believable plot	Scale	Mean	%	QD	n	Mean	%	QD	n
and dialogue.	Knowledge	3.1	43.8	.489	50	4.0	100.0	.00050	
	Importance	3.1	37.5	.437	42	3.4	68.6	.208	34
18. The same message is given in	Scale	Mean	%	QD	n	Mean	%	QD	n
words and video.	Knowledge	3.6	66.9	.786	74	4.0	100.0	.00074	
	Importance	3.5	65.2	.401	73	3.7	80.5	.000	62
19. Experiments are conducted in real	Scale	Mean	%	QD	n	Mean	%	QD	n
settings to give content which students	Knowledge	3.5	61.5	.437	71	4.0	100.0	.00071	
would not usually get.	Importance	3.5	66.1	.386	74	3.8	85.9	.00061	
20. Video advances content through									
imaginative camera shots, lighting, color,	Scale	Mean	%	QD	n	Mean	%	QD	n
motion, and digital effects which	Knowledge	3.4	58.0	.478	63	4.0	100.0	.000	63
provide pace and smooth transition.	Importance	3.5	58.9	.471	66	3.7	79.7	.00051	
21. Imaginatively uses verbal and non-	Scale	Mean	%	QD	n	Mean	%	QD	n
verbal sound to advance content; adds	Knowledge	3.3	47.3	.502	54	4.0	100.0	.000	54
variety and pace; music is not continuous.	Importance	3.4	48.2	.503	52	3.6	72.2	.000	39
22. Instructors, experts, and characters									
are competent presenters or actors who	Scale	Mean	%	QD	n	Mean	%	QD	n
convey enthusiasm, and do not	Knowledge	3.7	70.5	.288	78	4.0	100.0	.00078	
lecture or preach.	Importance	3.7	75.9	.000	85	3.9	88.5	.00069	

Cost Section. Scores for this section are shown in Table 14.

23. Compares favorably to other programs on the same subject (Brown, et al., 1972; Sive, 1983; Bates, 1987b). The statement was retained; importance scores were 63 percent for the group and 84 percent for experts. There were 16 remarks.

Four respondents stated that the cost should be appropriate for the available funding (Anderson, 1976; Sive, 1983; Bates, 1987b). As this was supported in the literature, it appeared as subsidiary statement 66 in the second round.

Five respondents stated that target learners and enrollment potential (Myers, 1972; Niemi, 1971; Bates, 1975a; Sive, 1983) should be identified. It was supported in the literature and added to the second round as subsidiary statement 67.

Three respondents suggested that profit projection and date when profit will be realized can be projected (NEA, 1976; Reiser, 1981; Sive, 1983; Reiser & Gagne, 1983; Bates, 1987b) should be included. The suggestion was supported in the literature and appeared in the second round as subsidiary statement 68.

One respondent asked for clarification and one suggested separating cost factors by components. To clarify the statement, it was rewritten to include the words “cost effectiveness” (Brown, et al., 1972; Sive, 1983; Bates, 1987b). It appeared as statement 69 in the second round.

Two respondents stated that the licensing contract should be appropriate for the institution's delivery methods and length of use (Anderson, 1976; Sive, 1983; Bates, 1987b). It appeared as subsidiary statement 70 in the second round.

One respondent suggested that tapes should be easily accessible for duplication and should be in excellent condition (Levine, 1987; Bates, 1987b). It was supported in the literature and added as subsidiary statement 71 in the second round.

Two respondents stated that marketing concepts and materials should be included (Levine, 1987; Bates, 1987b) in an evaluation. It was supported in the literature and added as subsidiary statement 72 in the second round (see Table 5).

Summary of the Cost Section: The original statement in the cost section was rewritten for the second round. Six subsidiary statements were added for the second round. All revisions were supported in the literature. The seven statements in the second round were required because the concerns expressed by the respondents could not be accommodated in one statement if scores were to accurately reflect the importance of the individual items to a telecourse evaluation.

Table 14

Round 1 Scores for the Cost Section

23. Compares favorably to other programs on the same subject.		Group				Expert			
	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	60.7	.456	69	4.0	100.0	.00069	
	Importance	3.5	63.4	.426	71	3.8	84.1	.00058	

Summary of Round 1

All of the 23 first round statements which were based upon the literature review were supported in the final group or expert importance scores at 50 percent consensus or above. For knowledge scores, the average mean was 3.4 with a range from 2.9 to 3.7; the average number of respondents ranking themselves as experts was 61.9 with a range from 37 to 82. The highest knowledge scores were 3.7 for the study guide, language use, and presenters; the lowest scores at 3.2 were for treatment and teaching strategies. The mean for knowledge of learning contracts was 3.0 and 2.9 for computer software. For importance scores, the average mean was 3.5 with a range from 3.1 to 3.9; the average number of respondents ranking themselves as experts was 69 with a range from 40 to 84. The highest importance scores were 3.9 for planning and language; the lowest scores at 3.1 were for learning contracts, computer software, and video treatment.

Respondents were asked to supply brief citations, but none did this.

Respondents suggested adding 28 subsidiary statements to the second round, that in their judgment, were important to a telecourse evaluation. Nine of the 28 subsidiary statements were finance related. If the suggested new statement was supported in the literature, it was added as a statement in the second round so that all respondents could determine the importance to a pre-

adoption telecourse evaluation. Based upon feedback from the respondents which stated that they felt items in a statement were too dissimilar to be evaluated collectively, 21 of the original statements were separated and rewritten as 42 statements for the second round so that scores would accurately reflect the judgment of respondents about smaller and more similar groups of criteria. Two of the original statements remained the same for the second round except for minor wording changes. Based upon feedback from the 178 respondents, the second round instrument was created and contained 72 statements. The second round was mailed to the 178 respondents.

Round 2

The format followed in the discussion is to state the statement, report the decision to accept or reject the statement based upon the expert subgroup importance scores, and briefly summarize the written feed back (Patton,1980) and interquartile deviation (QD) scores (a QD of .000 shows consensus) (Dalkey, 1971b). Scores for knowledge and importance are reported in tables following each section for the group and expert subgroup marking their scores at four; percentage of respondents, interquartile deviation (QD), and number of respondents. The group mean for knowledge and importance scores is shown for the group and expert subgroup.

Educational Objectives Section. Scores for this section are shown in Table 15.

1. Objectives are stated for the telecourse (Lundgren, et al., 1972; Armstrong, 1973; NEA, 1976) and each component (Sive, 1983) in cognitive, affective, and psychomotor statements appropriate for the content (Sive, 1978). The statement was retained; the expert importance score was 86 percent. Responses noted that this was an important concept to encourage faculty adoption and that objectives should not be so structured as to inhibit the use of television. Statement 1 was rewritten (from statement 1, round 1) for the second round; the expert importance QD was .000.

2. Objectives for the telecourse (Lundgren, et al., 1972; Armstrong, 1973; NEA, 1976) and each component (Sive, 1983) are at a level of difficulty appropriate for the content and learners (Brown, 1964; Erickson, 1968; Lesser, et al., 1972; Armstrong, 1973; Bergeson, 1976; Sive, 1983). The statement was retained; the expert importance score was 90 percent. Responses

noted that the range of learners makes it hard to reach all levels of difficulty. Statement 2 was a subsidiary statement which was added for the second round; the expert importance QD was .000.

3. Objectives are achievable by the average learner (Bruner, 1960; Schramm, et al., 1967; Erickson, 1968; Lesser, et al., 1972; Armstrong, 1973; EPIE, 1973; Bergeson, 1976; NEA, 1976; Sive, 1983); levels of achievement can be measured under specified conditions (Lundgren, et al., 1972; Bates, 1975a; Brown, 1977). The statement was retained; the expert importance score was 94 percent. One remarked that he was not sure what an average learner is and another observed that students' prerequisite experience must be identified. Statement 3 was rewritten for the second round (from statement 1, round 1); the expert importance QD was .000.

4. The telecourse meets the objectives of learners for required or elective courses (Myers, 1972; NEA, 1976; Levine, 1987). The statement was retained; the expert importance score was 94 percent. One noted that this is the instructor's responsibility. Statement 4 was a subsidiary statement which was added for the second round; the expert importance QD was .000.

5. Telecourse objectives and content are equivalent or similar to the on-campus course (Zigerell, 1986; Levine, 1987). The statement was retained; the expert importance score was 87 percent. One respondent suggested that the final survey determine the level of equivalency by percentage; others noted that an on-campus course may not exist; one wrote that "equivalent" courses are more easily accepted by on-campus administration. Statement 5 was a subsidiary statement which was added for the second round; the expert importance QD was .000.

6. The telecourse can be adapted to fit the on-campus equivalent (Sive, 1983; Zigerell, 1986; Levine, 1987). The statement was retained; the expert importance score was 86 percent. Respondents suggested adding the word "conveniently", that an equivalent course may not exist; and that this is essential. Statement 6 was a subsidiary statement which was added for the second round; the expert importance QD was .000.

Table 15

Round 2 Scores for the Educational Objectives Section

		Group				Expert			
1. Objectives are stated for the tele-									
course and each component in	Scale	Mean	%	QD	n	Mean	%	QD	n
cognitive, affective, and psychomotor	Knowledge	3.3	43.8	.489	50	4.0	100.0	.000	50
statements appropriate for the content.	Importance	3.5	60.7	.456	68	3.9	86.0	.000	43
2. Objectives for the telecourse and	Scale	Mean	%	QD	n	Mean	%	QD	n
each component are at a level of difficulty	Knowledge	3.5	57.1	.483	65	4.0	100.0	.000	65
appropriate for the content and learners.	Importance	3.8	76.8	.000	86	3.9	90.8	.000	59
3. Objectives are achievable by the aver-	Scale	Mean	%	QD	n	Mean	%	QD	n
age learner; levels of achievement can	Knowledge	3.4	52.7	.502	58	4.0	100.0	.000	58
be measured under specified conditions.	Importance	3.6	75.0	.000	84	3.9	94.8	.000	55
4. The telecourse meets the	Scale	Mean	%	QD	n	Mean	%	QD	n
objectives of learners for required	Knowledge	3.5	59.8	.464	67	4.0	100.0	.000	67
or elective courses.	Importance	3.6	74.1	.134	83	3.9	94.0	.000	63
5. Telecourse objectives and content	Scale	Mean	%	QD	n	Mean	%	QD	n
are equivalent or similar to the	Knowledge	3.6	71.4	.260	81	4.0	100.0	.000	81
on-campus course.	Importance	3.7	77.7	.000	87	3.8	87.5	.000	71
6. The telecourse can be adapted	Scale	Mean	%	QD	n	Mean	%	QD	n
to fit the on-campus equivalent.	Knowledge	3.5	63.4	.426	72	4.0	100.0	.000	72
	Importance	3.6	69.6	.312	78	3.8	86.1	.000	62

Instructional Design Section. Scores for this section are shown in Table 16.

7. The telecourse is fully planned (Erickson, 1972) and logically organized (Erickson, 1972; Bates, 1975a). The statement was retained; the expert importance score was 97 percent. One respondent noted that this was important for distance learners so that that would successfully complete the course. The expert importance QDs for both rounds were .000.

8. Telecourse components are necessary (Sive, 1983), well coordinated (Bates, 1975a, 1980) and accomplish objectives for which they were designed (Lesser, et al., 1972; Sive, 1983). The statement was retained; the expert importance score was 96 percent. One respondent noted that there were too many items in the statement. Statement 8 was rewritten for the second round (from round 1, statement 3). The expert importance QD was .000.

9. Uses teaching strategies appropriate for traditional (NEA, 1976; USDE, 1987) and adult learners (Matsui, 1981; Knowles, 1983). The statement was retained; the expert importance score was 84 percent. Respondents noted that it is difficult to include types of learners in the same statement or course; one suggested removing the words "traditional" and "adult" and inserting "appropriate for the target age group"; and one noted that learning strategies are selected by the local instructor. Statement 9 was rewritten for the second round (from round 1, statement 4). The expert importance QD was .000.

10. Uses a variety of teaching strategies appropriate to the content which reach learners who prefer to learn through visual, auditory, tactile (hands-on) and kinesthetic (emotional experiences) methods (Boucher, et al., 1973; EPIE, 1973; NEA, 1976; DeNike & Stroether, 1976; Bergeson, 1976; Meierhenry, 1981; Reiser & Gagne, 1983; Bates, 1987a). The statement was retained; the expert importance score was 80 percent. One respondent stated that "Strategies are outgrowth of the course, not the learner"; one stated that learning strategies are selected/designed by the local instructor; and one noted that "most campus courses don't do this." Statement 10 was rewritten for the second round (from round 1, statement 4). The expert importance QD was .000.

11. Lesson size (Bates, 1975a; Schoch, 1983; Wong & Wong, 1978-79; Curtis, 1989), number (Armstrong, 1973; Sive, 1983), pace (Diamond, 1964; Lesser, et al., 1972; Menmuir,

1982; Sive, 1983; Armstrong, et al., 1985; Ladd, 1989), depth (Armstrong, 1973), and sequence (Armstrong, 1973, Bates, 1987a) is appropriate (Armstrong, 1973) for the content, and learners (Curtis, 1989). The statement was retained; the expert importance score was 93 percent. Remarks regarded the clarification of the term "size" and the addition of content difficulty. Statement 11 was rewritten for the second round (from round 1, statement 5). The expert importance QD was .000.

12. Components encourage learner interaction with the content by posing challenging questions (Bruner, 1960; Schramm, et al., 1972; Boucher, et al., 1973; Haney & Ullmer, 1975; Sive, 1978, 1983; Knowles, 1983; Bates, 1987b; Curtis, 1989) and providing answers when appropriate (Boucher, et al, 1973; Knowles, 1983; Curtis, 1989); through written assignments and other techniques which motivate learner participation (Bruner, 1960; Schramm, et al., 1967; Lesser, et al., 1972; Haney & Ullmer, 1975; Sive, 1978, 1983; Bates, 1987b; Curtis, 1989). The statement was retained; the expert importance score was 80 percent. Responses included a suggestion that the original statement be kept because the new statement missed a critical point about feedback. One respondent noted that the faculty does this, not the telecourse. Statement 12 was rewritten for the second round (from round 1, statement 6). The expert importance QD was .000.

13. Components encourage critical viewing (Gueulette, 1980), reading (Bates, 1975a, 1987b), and thinking (Lundgren, et al., 1972). The statement was retained; the expert importance score was 91 percent. One respondent wrote that this is an appropriate use of the medium. Statement 13 was a subsidiary statement which was for the second round. The expert importance QD was .000.

14. Appropriate (DeNike & Stroether, 1976) visuals (Tosti & Ball, 1969; Bretz, 1971; Romiszowski, 1974; Branson, et al.,1975; Anderson, 1976; Kemp, 1980; Northcott & Holt, 1986) are used in each component which contribute to student learning (Reiser & Gagne, 1983). The statement was retained; the expert importance score was 95 percent. Respondents noted that visuals must be pertinent to objectives and that a differentiation should be made for audio components. Statement 14 was rewritten for the second round (from round 1, statement 7). The expert importance QD was .000.

15. Language is appropriate (Tosti & Ball, 1969; Bretz, 1971; Lesser, et al., 1972; Romiszowski, 1974; Branson, et al.,1975; Gropper, 1976; Anderson 1976; Gagne & Briggs, 1979; Kemp, 1980; Briggs & Wager, 1981; Northcott & Holt, 1986) for content (Brown, et al., 1972; Lesser, et al., 1972; EPIE, 1973; AASL, 1976; Brown, 1977; Sive, 1983), learners (Niemi, 1971; Myers, 1972; Bates, 1975a), interesting (NEA, 1976; Finkel, 1982; Bonani, 1982; Curtis, 1989), understandable, and similar throughout (Northcott & Holt, 1986). The statement was retained; the expert importance score was 97 percent. One respondent noted that this statement was better phrased in round one. Statement 15 was rewritten for the second round (from round 1, statement 8). The expert importance QD was .000.

16. Language in video component (Lundgren, et al., 1972; Bates, 1975a, 1987a; Blythe & Sweet, 1979; Weingartner, 1974; Curtis, 1989) is effectively delivered (Lundgren, et al., 1972; Curtis; 1989), well-phrased, and easy to listen to (Lesser, et al., 1972; Merrill & Goodman, 1972; Curtis, 1989). The statement was retained; the expert importance score was 95 percent. One respondent suggested adding the word "understandable." Statement 16 was rewritten for the second round (from round 1, statement 8). The expert importance QD was .000.

17. Language for print components is readable (Tosti & Ball, 1969; Bretz, 1971; Lesser, et al., 1972; Romiszowski, 1974; Branson, et al.,1975; Gropper, 1976; Anderson 1976; Gagne & Briggs, 1979; Kemp, 1980; Briggs & Wager, 1981; Northcott & Holt, 1986). The statement was retained; the expert importance score was 97 percent. Respondents suggested combining statements 15, 16 and 17 and adding the word "understandable." Statement 17 was rewritten for the second round (from round 1, statement 8). The expert importance QD was .000.

18. Encourages self-directed learning (Knowles, 1983). The statement was retained; the expert importance score was 83 percent. Respondents suggested that self-directed learning encouraged students to proceed with their work. One noted that adults were not their major population. Statement 18 was rewritten for the second round (from round 1, statement 9). The expert importance QD was .000.

19. Encourages the use of self-directed learning contracts to involve adult learners in planning learning objectives, identifying learning resources, setting deadlines, and identifying how to verify that the content has been learned and objectives accomplished (Knowles, 1983). The statement was deleted; the expert importance score was 72 percent. Statement 19 was rewritten for the second round (from round 1, statement 9). The expert importance QD was .000.

20. Assignments are appropriate for learners (USDE, 1987) and content (Knowles, 1983; Levine, 1987). The statement was retained; the expert importance score was 92 percent. One comment suggested adding that assignments "compensate for fewer TV hours than hours spent in traditional classroom course." Statement 20 was rewritten for the second round (from round 1, statement 10). The expert importance QD was .000.

21: Assignments are of interest (Myers, 1972; Niemi, 1971; Bates, 1975a) to learners (Knowles; 1984; USDE, 1987) and are balanced between viewing, reading, experiential, and interactive activities appropriate for distance learning (Knowles, 1983). The statement was retained; the expert importance score was 80 percent. One respondent noted that "interactive activities of minor - if any - importance at my institution (so far)." Another wrote that "balance is difficult to achieve." Statement 21 was rewritten for the second round (from round 1, statement 10). The expert importance QD was.000.

Table 16

Round 2 Scores for the Instructional Design Section

		Group				Expert			
7. The telecourse is fully planned and logically organized.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.2	67.9	.359	76	4.0	100.0	.000	76
	Importance	3.9	92.0	.000	103	4.0	97.4	.000	74
8. Telecourse components are necessary, well coordinated and accomplish objectives for which they were designed.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	54.5	.496	62	4.0	100.0	.000	62
	Importance	3.7	76.8	.000	86	4.0	96.8	.000	60
9. Uses teaching strategies appropriate for traditional and adult learners.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	58.9	.471	66	4.0	100.0	.000	66
	Importance	3.6	64.3	.414	72	3.8	84.9	.000	56
10. Uses a variety of teaching strategies appropriate to the content which reach learners who prefer to learn through visual, auditory, tactile (hands-on) and kinesthetic (emotional experiences) methods.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.3	43.8	.489	46	4.0	100.0	.000	46
	Importance	3.3	48.2	.503	54	3.7	80.9	.000	38
11. Lesson size, number, pace, depth, and sequence is appropriate for the content, and learners.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	58.1	.476	65	4.0	100.0	.000	65
	Importance	3.7	75.9	.000	85	3.9	93.8	.000	61
12. Components encourage learner interaction with the content by posing challenging questions and providing answers when appropriate; through written assignments and other techniques which motivate learner participation.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	50.0	.505	56	4.0	100.0	.000	56
	Importance	3.5	60.7	.456	68	3.8	80.4	.000	45
13. Components encourage critical viewing, reading and thinking.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	55.4	.493	62	4.0	100.0	.000	62
	Importance	3.7	75.9	.000	85	3.9	91.8	.000	57
14. Appropriate visuals are used in each component which contribute to student learning.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.6	65.2	.401	74	4.0	100.0	.000	74
	Importance	3.7	76.8	.000	86	3.9	95.9	.000	71

Table 16 (continued)

		Group				Expert			
15. Language is appropriate for content,	Scale	Mean	%	QD	n	Mean	%	QD	n
learners, interesting, understandable,	Knowledge	3.6	66.1	.386	75	4.0	100.0	.000	75
and similar throughout.	Importance	3.8	86.6	.000	97	4.0	97.3	.000	73
16. Language in video component is	Scale	Mean	%	QD	n	Mean	%	QD	n
effectively delivered, well-phrased,	Knowledge	3.7	72.3	.227	82	4.0	100.0	.000	82
and easy to listen to.	Importance	3.8	85.7	.000	96	3.9	95.1	.000	78
17. Language for print components	Scale	Mean	%	QD	n	Mean	%	QD	n
is readable.	Knowledge	3.7	74.1	.134	83	4.0	100.0	.000	83
	Importance	3.8	87.5	.000	96	4.0	97.6	.000	81
18. Encourages self-directed learning.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	50.0	.505	54	4.0	100.0	.000	54
	Importance	3.5	57.1	.483	64	3.8	83.0	.000	45
19. Encourages the use of self-directed learning contracts to involve adult learners in planning learning objectives, identifying learning resources, setting deadlines, and identifying how to verify that the content has been learned and objectives accomplished.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.1	35.7	.414	36	4.0	100.0	.000	36
	Importance	3.0	33.9	.514	38	3.6	72.1	.000	26
20. Assignments are appropriate for	Scale	Mean	%	QD	n	Mean	%	QD	n
learners and content.	Knowledge	3.6	61.6	.447	69	4.0	100.0	.000	69
	Importance	3.7	75.9	.000	85	3.9	92.8	.000	64
21. Assignments are of interest to learners and are balanced between viewing, reading, experiential, and interactive activities appropriate for distance learning.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	50.0	.505	55	4.0	100.0	.000	56
	Importance	3.5	58.0	.478	65	3.8	80.4	.000	45

Content Section. Scores for this section are shown in Table 17.

22. Content is appropriate to course title, description, and credit hours (Brown, et al., 1972; Armstrong, 1973; Bates, 1985a, 1987a; Levine, 1987). The statement was retained; the expert importance score was 94 percent with a QD of .000. There were no comments. Statement 22 was a subsidiary statement which was added for the second round.

23. Content is accurate (Erickson, 1972; AASL, 1976), clear (Brune, 1960; Schramm, et al., 1967; Lesser, et al., 1972), comprehensive (Armstrong, 1973), balanced (Erickson, 1972; EPIE, 1973; NEA, 1976; AASL, 1976), current (AASC, 1976; NEA, 1976; Sive, 1983), and well-documented (Armstrong, 1973). The statement was retained; the expert importance score was 96 percent with a QD of .000. One noted that "balanced" is hard to define. Another wrote that content/length will depend on the cost of the telecourse. Statement 23 was rewritten for the second round (from round 1, statement 11).

24. Content and visual elements (clothing, etc.) which will become outdated quickly are avoided (AASC, 1976; NEA, 1976; Sive 1983; Curtis, 1989). The statement was deleted; the expert importance score was 57 percent with a QD of .452. Statement 24 was rewritten for the second round (from round 1, statement 11).

25. For content in a rapidly changing field, the telecourse will be usable for two years (minimum) (AASC, 1976; Sive 1983; Curtis, 1989). The statement was deleted; the expert importance score was 69 percent with a QD of .000. Statement 25 was rewritten for the second round (from round 1, statement 11).

26. For content in a stable field, the telecourse will be usable for three years (minimum) (AASC, 1976; Sive 1983; Curtis, 1989). The statement was deleted; the expert importance score was 74 percent with a QD of .000. Statement 26 was rewritten for the second round (from round 1, statement 11).

27. Print components will be usable for two years (minimum) (AASC, 1976; Sive 1983; Curtis, 1989). The statement was deleted; the expert importance score was 71 percent for with a QD of .000. Statement 27 was rewritten for the second round (from round 1, statement 11).

Table 17

Round 2 Scores for the Content Section

		Group				Expert			
	Scale	Mean	%	QD	n	Mean	%	QD	n
22. Content is appropriate to course title, description, and credit hours.	Knowledge	3.5	59.8	.464	66	4.0	100.0	.000	66
	Importance	3.8	83.9	.000	94	3.9	94.2	.000	65
23. Content is accurate, clear, comprehensive, balanced, current, and well documented.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	56.3	.489	64	4.0	100.0	.000	64
	Importance	3.8	83.8	.000	93	4.0	96.8	.000	61
24.Content and visual elements (clothing, etc.) which will become outdated quickly are avoided.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	52.3	.502	60	4.0	100.0	.000	60
	Importance	3.3	44.1	.493	49	3.4	58.0	.452	33
25. For content in a rapidly changing field, the telecourse will be usable for two years (minimum).	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.3	46.9	.502	54	4.0	100.0	.000	54
	Importance	3.5	45.5	.499	51	3.4	69.8	.000	37
26. For content in a stable field, the telecourse will be usable for three years (minimum).	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.3	51.8	.503	58	4.0	100.0	.000	58
	Importance	3.3	48.2	.503	54	3.6	74.6	.000	44
27. Print components will be usable for two years (minimum).	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.2	45.6	.496	50	4.0	100.0	.000	50
	Importance	3.3	47.3	.502	53	3.6	71.2	.000	37

Textbook Section. Scores for this section are shown in Table 18.

28. Designed and written for the telecourse or correlates well with it (Bates, 1975; Levine, 1987); textbook revisions match video revisions (Bates, 1975; Levine, 1987). The statement was retained; the expert importance score was 86 percent with a QD of .000. Responses suggested that "it is unrealistic to expect video to be changed at the time the first print revision takes place. One asked why the text needed to be written to correlate with telecourse; one noted that " the mismatch/ disagreements must be rationally explained and justified in the telecourse study guide and/or faculty guide." Statement 28 was rewritten for the second round (from round 1, statement 12).

29. Facilitates student comprehension (Stoffel, 1987) through language (Northcott & Holt, 1986) and pace appropriate for the course and learners (Levine, 1987). The statement was retained; the expert importance score was 90 percent with a QD at .000. There were no comments. Statement 29 was a subsidiary statement which was added for the second round.

30. Textbook is widely used (Levine, 1987); if not a classic (Brey, 1988), it is current (Levine, 1987). The statement was deleted; the expert importance score was 72 percent with a QD of .000. Statement 30 was a subsidiary statement which was added for the second round.

31. The cost is reasonable for students (Reiser, 1981). The statement was retained; the expert importance score was 81 percent with a QD at .000. Responses asked for a definition of "reasonable" and one noted that it makes course adoption much easier. One respondent recommended this substitution for the word "reasonable": "The cost is commensurate with its usefulness to students in achieving course goals." Statement 31 was a subsidiary statement which was added for the second round.

32. Available from the publisher at the scheduled time (Levine, 1987). The statement was retained; the expert importance score was 96 percent with a QD of .000. Respondents noted the importance of text availability as it can "ruin the start time of the course." One respondent noted that this was "critical." Statement 32 was a subsidiary statement which was added for the second round.

Table 18

Round 2 Scores for the Textbook Section

		Group				Expert			
	Scale	Mean	%	QD	n	Mean	%	QD	n
28. Designed and written for the telecourse or correlates well with it; textbook revisions match video revisions.	Knowledge	3.5	56.3	.489	63	4.0	100.0	.000	63
	Importance	3.7	75.0	.000	84	3.8	86.4	.000	58
29. Facilitates student comprehension through language and pace appropriate for the course and learners.	Knowledge	3.5	55.4	.493	62	4.0	100.0	.000	62
	Importance	3.7	71.4	.260	80	3.9	90.5	.000	57
30. Textbook is widely used; if not a classic, it is current.	Knowledge	3.3	42.0	.478	47	4.0	100.0	.000	47
	Importance	3.4	50.9	.504	57	3.5	72.3	.000	34
31. The cost is reasonable for students.	Knowledge	3.5	60.7	.456	65	4.0	100.0	.000	65
	Importance	3.6	64.3	.414	72	3.8	81.4	.000	57
32. Available from the publisher at the scheduled time.	Knowledge	3.6	67.0	.371	75	4.0	100.0	.000	75
	Importance	3.8	83.9	.000	94	3.9	96.0	.000	72

Faculty Guide Section. Scores for this section are shown in Table 19

33. Contains segments for new faculty, responsibilities, objectives for the telecourse and each component (Dirr, 1986; Levine, 1987), instructional design (Dirr, 1986; Levine, 1987), lesson outlines (Dirr, 1986; Levine, 1987), a variety of assignments which encourage involvement, and optional syllabi for different texts, settings, and semester lengths (Levine, 1987). The statement was retained; the expert importance score was 87 percent with a QD of .000. Respondents suggested separating the statement; local faculty should have input to keep them interested and committed; and that some things cannot be offered in generic packages as responsibilities are an institutional matter. Statement 33 was rewritten for the second round (from round 1, statement 13).

34. Contains segments about distance learning (Rekkedal, 1982), learning from TV (Lesser, et al, 1972), self-directed learning (Knowles, 1983; Salomon, 1983), and student isolation (Finkel, 1982). The statement was deleted; the expert importance score was 73 percent with a QD of .000. Statement 34 was rewritten for the second round (from round 1, statement 13).

35. Contains teaching strategies appropriate for content for traditional (USDE, 1987) and adult learners (Matsui, 1982; Knowles, 1983), student level, student needs (Levine, 1987), and strategies for use for seminars, telephone meetings, letters to students, grading, and other forms of instructor feedback to distance learners (Finkel, 1982). The statement was retained; the expert importance score was 81 percent with a QD of .000. Respondents noted that instructors can benefit from such a guide, not all can fit this mold, and that they rely upon their own strategies. Statement 35 was rewritten for the second round (from round 1, statement 13).

36. Test bank has clearly stated objective and essay questions (Levine, 1987) relevant to objectives and content (Diamond,1964): includes questions on video, text and other components (Diamond, 1964; Bates, 1975b; Dirr, 1986); test keys; location of answers in content; and test validity (Northcott & Holt, 1986). The statement was retained; the expert importance score was 93 percent with a QD at .000. Respondents noted that test banks should include questions for all components; questions should probe various understanding levels; the question set a high

standard; and that few teachers use test banks. Statement 36 was rewritten for the second round (from round 1, statement 13).

37. Test formats are appropriate for at home tests, proctored testing (Diamond, 1964), and computer grading (Northcott & Holt, 1986). The statement was retained; the expert importance score was 84 percent with a QD at .000. One respondent noted that essay tests cannot be computer graded. Statement 37 was rewritten for the second round (from round 1, statement 13).

38. Updated if textbook or video has been revised (Sive, 1983). The statement was retained; the expert importance score was 94 percent with a QD at .000. There were no comments. This statement was a subsidiary statement which was added for the second round.

39. The format allows changes by the user institution (Zigerell, 1986). The statement was retained; the expert importance score was 87 percent with a QD at .000. One respondent suggested that copyright (Bates, 1987b) and ease of change be added. Copyright was added to the final statement as this is an essential legality which might not be considered it it was not mentioned.Statement 39 was a subsidiary statement which was added for the second round.

Table 19

Round 2 Scores for the Faculty Guide Section

		Group				Expert			
33. Contains segments for new faculty, responsibilities, objectives for the telecourse and each component, instructional design, lesson outlines, a variety of assignments which encourage involvement, and optional syllabi for different texts, settings, and semester lengths.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	63.4	.426	72	4.0	100.0	.000	72
	Importance	3.6	67.9	.353	76	3.9	87.5	.000	63
34. Contains segments about distance learning, learning from TV, self-directed learning, and student isolation.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	58.1	.478	64	4.0	100.0	.000	64
	Importance	3.3	48.2	.503	54	3.6	73.4	.000	47
35. Contains teaching strategies appropriate for content for traditional and adult learners, student level, student needs, and strategies for use for seminars, telephone meetings, letters to students, grading, and other forms of instructor feedback to distance learners.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	61.6	.447	69	4.0	100.0	.000	69
	Importance	3.5	64.3	.404	72	3.7	81.2	.000	56
36. Test bank has clearly stated objective and essay questions relevant to objectives and content: includes questions on video, text and other components; test keys; location of answers in content; and test validity.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	50.9	.504	57	4.0	100.0	.000	57
	Importance	3.6	65.2	.401	73	3.9	93.0	.000	53
37. Test formats are appropriate for at home tests, proctored testing, and computer grading.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.2	45.5	.496	53	4.0	100.0	.000	53
	Importance	3.4	53.6	.499	60	3.8	84.9	.000	45
38. Updated if textbook or video has been revised.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	58.9	.471	67	4.0	100.0	.000	67
	Importance	3.7	75.9	.000	85	4.0	94.0	.000	63
39. The format allows changes by the user institution.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	58.0	.478	65	4.0	100.0	.000	65
	Importance	3.6	65.2	.401	73	3.8	87.9	.000	58

Student Study Guide Section. Scores for this section are shown in Table 20

40. Contains segments on objectives, components, lesson outlines, video outlines, glossary, key concepts, references, exercises, self-tests with explanations (Levine, 1987), self-directed learning strategies (Knowles, 1983; Salomon, 1983), and activities to pursue personal interests appropriate for the content (Quinn & Adams, 1989). The statement was retained; the expert importance score was 94 percent with a .000 QD. Respondents noted that "Independent study using adult education principles is the only successful way to put this type of material across"; and the institution may prefer to provide a study guide.Statement 40 was a subsidiary statement which was added for the second round.

41. Contributes to the learner achieving objectives by serving as the student's personal tutor and directing learning from the components (Bates,1975b; Quinn & Adams, 1989). The statement was retained; the expert importance score was 91 percent with a .000 QD. One respondent suggested combining this with statement 40. Statement 41 was rewritten for the second round (from round 1, statement 14).

42. The cost is appropriate for students (Reiser, 1981). The statement was retained; the expert importance score was 88 percent with a .000 QD. One respondent suggested changing "appropriate" to "reasonable." One suggested adding "The cost is commensurate with its usefulness to students in achieving course goals." Statement 42 was a subsidiary statement which was added for the second round.

43. The format allows changes by the user institution (Quinn & Adams, 1984; Levine, 1987). The statement was retained; the expert importance score was 81 percent with a .000 QD. One respondent suggested that copyright (Bates, 1987b) and ease of change be included. Copyright was supported in the literature and was added to the final statement as this is a legality which might not be considered if it was not mentioned. One respondent noted that they do a handbook to augment the guide; one wrote that it was unrealistic to impose conditions requiring the producer/publisher to design it so that elements or pages could be readily deleted or replaced locally; he suggested using local supplements and/or discussion sessions. Statement 43 was a subsidiary statement which was added for the second round.

Table 20

Round 2 Scores for the Student Study Guide Section

		Group				Expert			
40. Contains segments on objectives, components, lesson outlines, video outlines, glossary, key concepts, references, exercises, self-tests with explanations, self-directed learning strategies, and activities to pursue personal interests appropriate for the content.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.6	66.1	.386	75	4.0	100.0	.000	75
	Importance	3.7	79.5	.000	89	4.0	94.4	.000	71
41. Contributes to the learner achieving objectives by serving as the student's personal tutor and directing learning from the components.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	58.9	.471	67	4.0	100.0	.000	67
	Importance	3.7	72.3	.227	81	4.0	91.0	.000	61
42. The cost is appropriate for students.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	61.6	.447	68	4.0	100.0	.000	68
	Importance	3.6	66.1	.386	74	3.8	88.4	.000	61
43. The format allows changes by the user institution.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	51.8	.503	58	4.0	100.0	.000	58
	Importance	3.4	54.5	.496	61	3.7	81.0	.000	47

Computer Software Section. Scores for this section are shown in Table 21.

44. Appropriate to content and contributes to achieving educational objectives (Dirr, 1986; Bates, 1987b). The statement was retained; the expert importance score was 91 percent and .000 QD. One respondent wrote that telecourses are for off-campus students who often don't have access to a PC. Statement 44 was a subsidiary statement which was added for the second round.

45. Versions and documentation available for most campus and student computer systems (IBM, Apple, Macintosh) (Dirr, 1986; Levine, 1987; Brey, 1988). The statement was retained; the expert importance score was 86 percent and QD at .000. Respondents suggested that these versions were important but all of them would be hard to find. Statement 45 was rewritten for the second round (from round 1, statement 15).

46. Appropriate to the students' computer literacy; user friendly, and error free (Bretz, 1971; Dirr, 1986). The statement was retained; the expert importance score was 95 percent and QD at .000. One respondent wrote that this was "very important"; one objected to "students' computer ability." Statement 46 was a subsidiary statement which was added for the second round.

47. Site and home licensing is available (Dirr, 1986). The statement was retained; the expert importance score was 90 percent with a .000 QD. There were no comments. Statement 47 was rewritten for the second round (from round 1, statement 15).

48. Cost is appropriate for the institution and students (Reiser, 1981). The statement was retained; the expert importance score was 88 percent with a .000 QD. One respondent suggested changing the word "appropriate" to "reasonable." Another recommended adding; "The cost is commensurate with its usefulness to students in achieving course goals." Statement 48 was a subsidiary statement which was added for the second round.

Table 21

Round 2 Scores for the Computer Software Section

		Group				Expert			
44. Appropriate to content and contributes	Scale	Mean	%	QD	n	Mean	%	QD	n
to achieving educational objectives.	Knowledge	3.1	42.0	.587	45	4.0	100.0	.000	45
	Importance	3.4	57.1	.483	64	3.8	91.3	.000	42
45. Versions and documentation available	Scale	Mean	%	QD	n	Mean	%	QD	n
for most campus and student computer	Knowledge	3.0	39.3	.563	43	4.0	100.0	.000	43
systems (IBM, Apple, Macintosh).	Importance	3.5	58.0	.478	65	3.8	86.4	.000	38
46. Appropriate to the students'	Scale	Mean	%	QD	n	Mean	%	QD	n
computer literacy; user friendly,	Knowledge	3.1	43.7	.575	48	4.0	100.0	.000	48
and error free.	Importance	3.6	71.4	.260	80	3.9	95.8	.000	46
47. Site and home licensing is available.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.0	38.4	.596	42	4.0	100.0	.000	42
	Importance	3.3	51.8	.503	58	3.9	90.5	.000	36
48. Cost is appropriate for the	Scale	Mean	%	QD	n	Mean	%	QD	n
institution and students.	Knowledge	3.2	46.4	.499	52	4.0	100.0	.000	52
	Importance	3.5	64.3	.414	72	3.8	88.5	.000	46

Video Section. Scores for this section are shown in Table 22.

49. The video technical quality should meet professional broadcast quality standards (Erickson, 1968; Dirr, 1986; Bates 1987a; Brey, 1988). The statement was retained; the expert importance score was 82 percent with a .000 QD. One respondent wrote that since "telecourse learners are long-time consumers of commercial TV and they take commercial TV production values to be the 'norm.' Subconsciously they compare the production values of a telecourse with what they see on TV every night. If by comparison, the telecourse appears 'cheap' or 'not up to par' in terms of production values, 'charisma' of the 'performers' (teachers), or is lacking in any other way, the students are likely to be 'turned off' or otherwise not pay as much attention." Other responses noted that professional broadcast quality might not be an issue if tapes were only used in learning centers. Two respondents suggested that either statement 49 or 50 had to be deleted. Statement 49 was rewritten for the second round (from round 1, statement 16).

50. The video technical quality should meet professional broadcast quality standards appropriate to the delivery method (cable, ITFS, broadcast, learning center, etc.) (AASL, 1976; Brey, 1988). The statement was retained; the expert importance score was 90 percent with a .000 QD. Respondents repeated remarks for statement 49, but three stated that the video technical quality should always be at the highest level - regardless of delivery system. Statement 50 was a subsidiary statement which was added for the second round.

51. Program length fits standard periods such as 30 or 60 minutes (as opposed to 19 minutes or 47 minutes which do not fit 30-minute programming periods) (Erickson, 1968; Dirr, 1986; Bates, 1987a). The statement was retained; the expert importance score was 80 percent with a .000 QD. Respondents agreed that it was necessary for telecourses which were broadcast to meet programming periods; one noted that this was not necessary if the telecourse was not broadcast. A respondent who produces telecourses wrote that "In our experience 30-minute (28.5 minutes) programs work well for most users: fits open broadcast and cable TV scheduling, generally holds students' attention throughout (although 15-minute segments would help the attention-span problem somewhat). 60-minute programs should be designed to be divisible into two 30-minute

parts (about 28.5 each) in order that the two parts might be delivered separated by several hours to days if the user institution wants to." Statement 51 was rewritten for the second round (from round 1, statement 16).

52. Individual programs should be 30 minutes long (Dirr, 1986). The statement was deleted; the expert importance score was 46 percent with a .833 QD. Statement 52 was a subsidiary statement which was added for the second round.

53. Individual programs should be 60 minutes long (Dirr, 1986). The statement was deleted; the expert importance score was 20 percent with .590 QD. Statement 53 was a subsidiary statement which was added for the second round.

54. A total of 15 hours of video programming is ideal (Dirr, 1986). The statement was deleted; the expert importance score was 42 percent with a .830 QD. Statement 54 was a subsidiary statement which was added for the second round.

55. Treatment is appropriate to content: documentary, lecture, discussion, panel, drama, humor, etc. (Curtis, 1989), and does not exclusively use a lecture or "talking head" format (Lesser, et al, 1972; Bates, 1983; Salomon, 1983; Curtis, 1989). The statement was retained; the expert importance score was 80 percent with a .000 QD. Five responses noted that a "talking head" is acceptable if it is done correctly. One noted that taking a telecourse is difficult when it is too boring. Statement 55 was rewritten for the second round (from round 1, statement 17).

56. The dialogue is believable (Lesser, et al, 1972). The statement was retained; the expert importance score was 88 percent with a .000 QD. One respondent questioned the use of the word "believable." Statement 56 was rewritten for the second round (from round 1, statement 17).

57. The television program gives the same message in spoken words and video (Schramm, et al., 1967; Salomon, 1983). The statement was retained; the expert importance score was 84 percent. The statement was essentially unchanged (from round 1, statement 18). Expert importance QD remained at .000 for both rounds. One respondent objected to the use of the word "same" as it implies redundancy rather than complementary video and audio.

58. Enriches learning with real-life application of theoretical content by conducting video experiments and demonstrations in realistic settings (Lundgren, et al., 1972; Bates, 1974, 1983, 1987a) (industrial laboratory, office etc.) or video field trips to realistic locations (museums, factories, clinics, etc.) (Lundgren, et al, 1972). The statement was retained; the expert importance score was 88 percent with a .000 QD. Comments were in agreement with the statement and one noted that the experiment should have a logical reason for an outside location. Statement 58 was rewritten for the second round (from round 1, statement 19).

59. Video advances content understanding by providing appropriate pace (Lesser, et al., 1972). The statement was retained; the expert importance score was 84 percent with a QD of .000. A respondent suggested combining this with statement 61. This statement was rewritten for the second round (from round 1, statement 20).

60. Production values are high so that the production becomes invisible; production values include appropriate camera shots, good lighting, color balance, motion sequences, special/digital effects appropriately used, consistently good level of audio, and clean editing (Lesser, et al., 1972). The statement was retained; the expert importance score was 80 percent with a .000 QD. One respondent questioned the use of the word "invisible" and one suggested adding "audio and clearly readable graphics." One noted that "quality production is critical." Statement 60 was rewritten for the second round (from round 1, statement 20).

61. Imaginatively uses voice and sound to advance content (Lesser, et al., 1972; Lundgren, et al., 1972). The statement was retained; the expert importance score was 82 percent with a .000 QD. One respondent noted that this statement was better than the first round statement and one suggested combining it with 59. Statement 61 was rewritten for the second round (from round 1, statement 21).

62. Sound adds appropriate variety and sets pace (Curtis, 1989). The statement was deleted; the expert importance score was 76 percent with a .000 QD. Statement 62 was rewritten for the second round (from round 1, statement 21).

63. Instructor(s) is a skillful presenter with content expertise (Brown, 1964; Lundgren, et al, 1972) who communicates a sincere enthusiasm for the subject (Lesser, et al, 1972; Bates, 1983; Salomon, 1983; Curtis, 1989). The statement was retained; the expert importance score was 90 percent with a QD at .000. Respondents noted that good classroom instructors with content expertise are not always good TV presenters. One respondent who produces telecourses wrote: " We find no evidence to support the myth that the video can have academic quality and respectability only if the presenter is a 'certified' academic; in fact, we have overwhelming evidence to the contrary." Statement 63 was rewritten for the second round (from round 1, statement 22).

64. Experts are nationally recognized or acknowledged leaders in the field (Levine, 1987). The statement was deleted; the expert importance score was 44 percent with a .493 QD. Statement 64 was rewritten for the second round (from round 1, statement 22).

65. Actors are competent in their craft (Lesser, et al., 1972). The statement was retained; the expert importance score was 82 percent with a .000 QD. One respondent suggested changing the word "competent" to "credible" and one preferred no actors. Statement 65 was rewritten for the second round (from round 1, statement 22).

Table 22

Round 2 Scores for the Video Section

		Group				Expert			
49. The video technical quality should meet professional broadcast quality standards.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.6	67.9	.353	75	4.0	100.0	.000	75
	Importance	3.6	68.8	.334	75	3.8	82.9	.000	63
50. The video technical quality should meet professional broadcast quality standards appropriate to the delivery method (cable, ITFS, broadcast, learning center, etc.)	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.6	68.8	.334	77	4.0	100.0	.000	77
	Importance	3.7	80.4	.000	90	3.8	90.9	.000	70
51. Program length fits standard periods such as 30 or 60 minutes (as opposed to 19 minutes or 47 minutes which do not fit 30-minute programming periods).	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.6	66.1	.386	76	4.0	100.0	.000	76
	Importance	3.5	64.3	.414	72	3.7	80.5	.000	62
52. Individual programs should be 30 minutes long.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	59.8	.464	67	4.0	100.0	.000	67
	Importance	2.8	32.1	.645	36	2.9	46.4	.833	32
53. Individual programs should be 60 minutes long.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	53.6	.499	60	4.0	100.0	.000	60
	Importance	2.4	16.1	.496	18	2.3	20.0	.590	12
54. A total of 15 hours of video programming is ideal.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	60.7	.456	67	4.0	100.0	.000	67
	Importance	2.7	32.1	.700	36	3.0	47.1	.830	32
55. Treatment is appropriate to content: documentary, lecture, discussion, panel drama, humor, etc., and does not exclusively use a lecture or “talking head” format	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.6	67.9	.353	77	4.0	100.0	.000	77
	Importance	3.6	65.2	.401	73	3.8	80.5	.000	62
56.The dialogue is believable.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.6	67.0	.371	75	4.0	100.0	.000	75
	Importance	3.7	74.1	.134	83	3.8	80.0	.000	67

Table 22 (continued)

		Group				Expert			
57. The television program gives the	Scale	Mean	%	QD	n	Mean	%	QD	n
same message in spoken words	Knowledge	3.6	61.6	.447	69	4.0	100.0	.000	69
and video.	Importance	3.6	68.8	.334	77	3.8	84.1	.000	58
58. Enriches learning with real-life application of	Scale	Mean	%	QD	n	Mean	%	QD	n
theoretical content by conducting video experi-	Knowledge	3.5	60.7	.456	69	4.0	100.0	.000	69
ments and demonstrations in realistic settings	Importance	3.6	67.9	.353	76	3.9	88.4	.000	61
(industrial lab, office, etc.) video field trips to realistic locations (museums, factories, clinics, etc.).									
59. Video advances content	Scale	Mean	%	QD	n	Mean	%	QD	n
understanding by providing	Knowledge	3.5	55.4	.493	62	4.0	100.0	.000	62
appropriate pace.	Importance	3.6	63.4	.426	71	3.8	84.1	.000	53
60. Production values are high so that the production becomes invisible; production	Scale	Mean	%	QD	n	Mean	%	QD	n
values include appropriate camera shots,	Knowledge	3.5	59.8	.464	68	4.0	100.0	.000	68
good lighting, color balance, motion.	Importance	3.5	64.3	.414	72	3.8	80.9	.000	55
61.Imaginatively uses voice and	Scale	Mean	%	QD	n	Mean	%	QD	n
sound to advance content.	Knowledge	3.4	54.5	.496	62	4.0	100.0	.000	62
	Importance	3.4	55.4	.493	62	3.8	82.3	.000	51
62. (Sound) Adds appropriate variety	Scale	Mean	%	QD	n	Mean	%	QD	n
and sets pace.	Knowledge	3.4	53.6	.499	60	4.0	100.0	.000	60
	Importance	3.4	51.7	.503	58	3.7	76.7	.000	46
63.Instructor(s) is a skillful presenter with	Scale	Mean	%	QD	n	Mean	%	QD	n
content expertise who communicates	Knowledge	3.7	75.0	.000	85	4.0	100.0	.000	85
a sincere enthusiasm for the subject.	Importance	3.8	85.7	.000	94	3.9	90.7	.000	77
64. Experts are nationally recognized	Scale	Mean	%	QD	n	Mean	%	QD	n
or acknowledged leaders in the field.	Knowledge	3.4	53.6	.499	61	4.0	100.0	.000	60
	Importance	3.0	33.9	.493	38	3.1	44.3	.493	27
65. Actors are competent in their craft.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	54.4	.496	60	4.0	100.0	.000	60
	Importance	3.5	60.7	.456	68	3.8	82.0	.000	50

Cost Section . Scores for this section are shown in Table 23

66. The cost is appropriate for the available funding (Anderson, 1976; Sive, 1983; Bates, 1987b). The statement was retained; the expert importance score was 93 percent with a .000 QD. Two responses asked for a word clarification and one suggested changing "appropriate" to "reasonable." Statement 66 was a subsidiary statement which was added for the second round.

67. Target learners and enrollment potential can be identified (Myers, 1972; Niemi, 1971; Bates, 1975a; Sive, 1983). The statement was retained; the expert importance score was 83 percent with a .000 QD. There were no comments. Statement 67 was a subsidiary statement which was added for the second round.

68. Profit projection and date when profit will be realized can be projected (NEA, 1976; Reiser, 1981; Sive, 1983; Reiser & Gagne, 1983; Bates, 1987b). The statement was deleted; the expert importance score was 45 percent with a .598 QD. Statement 68 was a subsidiary statement which was added for the second round.

69. Cost effectiveness can be compared to other telecourses on the same subject (Brown, et al., 1972; Sive, 1983; Bates, 1987b). The statement was deleted; the expert importance score was 70 percent with a .000 QD. Statement 69 was rewritten for the second round (from round 1, statement 23).

70. The licensing contract is appropriate for the institution's delivery methods and length of use (Anderson, 1976; Sive, 1983; Bates, 1987b). The statement was retained; the expert importance score was 95 percent with a .000 QD. There were no comments. Statement 70 was a subsidiary statement which was added for the second round.

71. Tapes are easily accessible for duplication and are in excellent condition (Levine, 1987; Bates, 1987b). The statement was retained; the expert importance score was 96 percent with a .000 QD. One respondent noted that these are two different concerns and one noted the importance. Statement 71 was a subsidiary statement which was added for the second round.

72. Marketing concepts and materials are included (Levine, 1987; Bates, 1987b). The statement was deleted; the expert importance score was 64 percent with a .379 QD. Statement 72 was a subsidiary statement which was added for the second round.

Table 23

Round 2 Scores for the Cost Section

		Group				Expert			
66. The cost is appropriate for the available funding.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.5	63.4	.426	71	4.0	100.0	.000	71
	Importance	3.7	73.2	.187	82	4.0	93.0	.000	66
67. Target learners and enrollment potential can be identified.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	53.8	.499	60	4.0	100.0	.000	60
	Importance	3.6	63.4	.426	71	3.8	83.3	.000	50
68. Profit projection and date when profit will be realized can be projected.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.0	36.7	.541	40	4.0	100.0	.000	40
	Importance	2.8	26.8	.458	30	3.1	45.0	.598	18
69. Cost effectiveness can be compared to other telecourses on the same subject.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.3	48.2	.503	54	4.0	100.0	.000	54
	Importance	3.3	49.1	.504	55	3.6	70.4	.000	38
70. The licensing contract is appropriate for the institution's delivery methods and length of use.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.3	55.4	.493	62	4.0	100.0	.000	62
	Importance	3.6	70.5	.288	79	3.9	95.2	.000	59
71. Tapes are easily accessible for duplication and are in excellent condition.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.6	70.5	.288	79	4.0	100.0	.000	79
	Importance	3.7	79.5	.000	89	3.9	96.2	.000	76
72. Marketing concepts and materials are included.	Scale	Mean	%	QD	n	Mean	%	QD	n
	Knowledge	3.4	56.2	.489	62	4.0	100.0	.000	62
	Importance	3.2	42.0	.478	47	3.5	64.6	.379	40

Summary of Round 2

In the second round, respondents were asked to compare their original scores with the median score and to revise their first round evaluations. Respondents retaining an outlier response were asked to provide written justification and citations to defend the response (Sackman, 1974; Thompson, 1973), however, no comments included citations. Respondents could make statements criticizing or supporting statements and comments (Helmer, 1966: Thompson, 1973). Respondents were asked to consider all forms of feedback and to revise their responses (Helmer, 1966: Thompson, 1973). For the second round, consensus was deemed to occur if 80 percent of the expert subgroup rated the statement at four for "very important". If the expert subgroup score was below 80 percent, consensus did not occur and the question was deleted.

Fifty-seven statements were supported by the expert importance scores (see Table 24) (See Appendix E for the final instrument). The 15 statements which were not supported were in production, areas which were covered by credit granting regulations, delivery methods, or other institutional procedures according to respondents comments.

The decision to discontinue iteration and accept that consensus did not exist was made after the data from round two was analyzed (Martino, 1972; Sackman, 1974) and it was determined that iteration had reached a point of diminishing return (Sackman, 1974) as Delphi cannot force latent consensus if it does not exist (Rescher,1969). Additionally, the group importance scores for the deleted statements were very low (Dalkey & Rourke, 1971a). Dalkey (1968) and Martino (1972) found that there is seldom significant movement in the answers in the third and fourth round. The 80 percent consensus of the expert subgroup was accepted as the final group consensus (Helmer, 1966; Dalkey, 1969b; Kalton, 1983) and ensured that the true experts for the question had the strongest influence over the answer.

The average group mean knowledge score was 3.4 with an average of 62 respondents marking their knowledge about a statement at the highest rank. The average group mean importance score was 3.5 with an average of 68 respondents marking the importance of the statement at the highest rank.

Interquartile Deviation. Given iteration with feedback, the group should exhibit convergence of opinion toward consensus (Dalkey, 1969b). Individual judgments should be reasonably influenced by the additional information furnished by feedback from the group so that shifts of individual responses toward the group response and reduction in group variability occurs (Dalkey, 1969b). This is reflected in the interquartile deviation (QD). The objective is to narrow the interquartile range without pressuring the respondents to the extent that deviant opinion is not allowed. This is done in part by asking deviants to justify their position (Makridakis, et al., 1983). This is a valid indicator of the mean accuracy of group responses and indicates how widely the answers differed from one another (Dalkey, 1969b). Dalkey (1969b) states that if respondents do not utilize the information reports of the group response on the first round when generating second round responses, it is inappropriate to consider these responses as judgment (Dalkey, 1969b). Favorable aspects of group value judgments depend in part upon the degree to which it is considered that the group is judging something rather than reporting personal attitudes. Conditions for assuming that group judgment is operating includes high subgroup agreement, and change and convergence of the QD on iteration with feedback (Dalkey, 1971b).

For this study the expert subgroup agreement was shown in the expert percentages of agreement on the 57 statements which reached consensus and had a QD of .000. Eight deleted statements also held an expert importance QD of .000 but did not reach consensus. Seven deleted statements had expert QDs which ranged from .379 to .833.

The very low expert importance QDs tends to support Helmer's (1966, 1967) statements that the reasoning process involved in Delphi leads to a clarification of the issues surrounding a statement for respondents even in the absence of complete consensus. The QD is a qualitative measure which shows the gross direction of the movement of the scores.

Based upon the expert subgroup scores showing agreement at or above 80 percent and experts QDs at .000, it is assumed that group judgment was operating as defined by Dalkey (1971b) rather than personal attitudes.

Table 24

Final Questions

Section 1: Educational Objectives

1. Are objectives for the telecourse and each component stated in cognitive, affective, and psychomotor statements appropriate for the content?
2. Are objectives for the telecourse and each component at a level of difficulty appropriate for the content and learners?
3. Are objectives achievable by the institution's average student; can levels of achievement be measured under specified conditions?
4. Will the telecourse meet the educational objectives of learners as either a *required* or as an *elective* course?
5. Are the telecourse objectives and content equivalent/similar to the on-campus course?
6. If the telecourse is not equivalent to the on-campus course, can it be adapted to be equivalent?

Section 2: Instructional Design

7. Is the telecourse fully planned and logically organized?
8. Is each telecourse component necessary, well coordinated and does it accomplish objectives for which it was designed?
9. Does the telecourse use teaching strategies appropriate for traditional and adult learners?
10. Does the telecourse use a variety of teaching strategies appropriate to the content which reach learners who prefer to learn through visual, auditory, tactile (hands-on) and kinesthetic (emotional experiences) methods.
11. Is the lesson size (amount and difficulty of content), number, pace, depth, and sequence appropriate for the content, and learners?
12. Do components encourage learner interaction with the content by posing challenging questions and providing answers when appropriate; through written assignments and other techniques which motivate learner participation?
13. Do components encourage critical viewing, reading and thinking?
14. Are appropriate visuals used in each visual component which contribute to student learning?
15. Is language appropriate for content and learners; interesting, understandable, and similar throughout all components?
16. Is the language in the video component effectively delivered; is it well-phrased, and easy to listen to?
17. Is the language in print components readable?
18. Is self-directed learning encouraged in all components?
19. Are assignments appropriate for learners and content?
20. Are assignments of interest to learners and balanced between viewing, reading, experiential, and interactive activities appropriate for distance learning?

Section 3: Content

21. Is the content appropriate to course title, description, and credit hours?
22. Is the content accurate, clear, comprehensive, balanced, current, and well-documented?

Section 4: Textbook

23. Is the textbook designed and written for the telecourse or does it correlate well with it; do textbook revisions match video revisions?
24. Does the textbook facilitate student comprehension through language and pace appropriate for the course and learners?
25. Is the cost of the textbook reasonable for students?
26. Will the textbook be available from the publisher at the scheduled time?

Section 5: Faculty Guide

27. Does the faculty guide contain segments for new faculty, faculty responsibilities, objectives for the telecourse and each component, instructional design, lesson outlines, a variety of assignments which encourage involvement, and optional syllabi for different texts, settings, and semester lengths?
28. Does the faculty guide contain teaching strategies appropriate for content for traditional and adult learners, student level, student needs, and strategies for use for seminars, telephone meetings, letters to student(s), grading, and other forms of instructor feedback to the distance learner?
29. Does the faculty guide test bank have clearly stated objective and essay questions relevant to objectives and content: are questions included on video, text and other components; are test keys included; are content locations of test answers listed; do tests have validity?
30. Are test formats appropriate for at home tests, proctored testing, and computer testing?
31. Has the faculty guide been updated if the textbook or video has been revised?
32. Does the copyright and format of the faculty guide allow changes by the user institution?

Section 6: Student Study Guide

33. Does the study guide contain segments on objectives, components, lesson outlines, video outlines, glossary, key concepts, references, exercises, self-tests with explanations, self-directed learning strategies, and activities to pursue personal interests appropriate for the content?
34. Does the student study guide contribute to the student achieving objectives by serving as the student's personal tutor and directing the student's learning from the components?
35. Is the cost of the study guide appropriate for the institution's students?
36. Does the copyright and format of the study guide allow changes by the user institution?

Section 7: Computer Software

37. Is the computer software appropriate to content; does it contribute to achieving educational objectives?

38. Are computer software versions and documentation available for most campus and student computer systems (IBM, Apple, Macintosh)?
39. Is the computer software appropriate to the students' computer literacy; user friendly and error free?
40. Is the computer software available for site and home licensing?
41. Is the computer software cost appropriate for the institution and the institution's students?

Section 8: Video

42. Does the video technical quality meet professional broadcast quality standards if it is to be broadcast?
43. Does the video technical quality meet quality standards appropriate to the delivery method for which it is intended to be used such as cable, ITFS, fiber optic cable, learning center, or tapes loaned to students?
44. Does program length fit standard periods such as 30 or 60 minutes (as opposed to 41, 19 minutes or 47 minutes which do not fit 30-minute programming periods)?
45. Is the treatment appropriate to content: documentary, lecture, discussion, panel, drama, humor, etc., and does not exclusively use a lecture or "talking head" format?
46. Is the dialogue believable in the video program?
47. Does the television program give the same message in spoken words and video?
48. Does the video enrich learning with real-life application of theoretical content by conducting video experiments and demonstrations in realistic settings (industrial laboratory, office etc.) or video field trips to realistic locations (museums, factories, clinics, etc.)?
49. Does the video advance content understanding by providing appropriate pace?
50. Are production values high so that the production becomes invisible; production values include appropriate camera shots, good lighting, color balance, motion sequences, special/digital effects appropriately used, consistently good level of audio, and clean editing?
51. Is voice and sound imaginatively used to advance content?
52. Is the instructor(s) a skillful presenter who has content expertise and who communicates a sincere enthusiasm for the subject?
53. Are actors competent in their craft?

Section 9: Cost

54. Is the cost appropriate for the institution's available funding?
55. Can target learners and enrollment potential be identified?
56. Is the licensing contract appropriate for the institution's delivery methods and length of use?
57. Are dubbing masters easily accessible and in excellent condition?

Chapter 5

Summary and Conclusions

Context

Post-secondary institutions offer telecourses with video delivered by broadcast television, cable, satellite, fiber optics, videodisc and learning centers. The program is augmented by textbooks, study guides, audio, computers, laboratories, and seminars. Telecourses are available locally, regionally, nationally, and internationally (Zigerell, 1986). This study focused on video telecourses augmented by print materials which are offered for undergraduate or graduate credit through any delivery method.

Problem

Educational literature is flooded with instruments which have been developed for use in evaluating learning resources and instructional materials (Teague, 1981). There is agreement in the literature that media should be evaluated; however there is little agreement on what constitutes good evaluation (Tanzman & Dunn, 1971; Armstrong, 1973; EPIE, 1973; Bates, 1974; NEA, 1976; Bergeson, 1976; Anderson, 1976; Komoski, 1977; Sive, 1978, 1983; Hewitt, 1980, 1982; Kressel, 1986; Mayor & Dirr, 1986; Holt, 1989; Portway, 1989). Many forms have been designed for local applications (Teague, 1981). Bates (1974) contends that the wrong criteria have been applied to judge the value of a program.

Knowles (1983) states that two models have been followed; the pedagogical model of learning and the entertainment model of media use. As a result, the media for the most part have not been used effectively as resources for learning and the result is less than optimal learning. He suggests following the andragogical model of learning and the educational model of media use. The key features of the andragogical model include interaction between programs and learners; task centeredness organized around the acquisition of the knowledge, skills, understandings, attitudes, and values that are applicable to performing life tasks with which adults are concerned; individualization which takes learner differences into account regarding experiential backgrounds,

readiness to learn, motivation to learn, learning styles, developmental stages, pace of learning; and self directedness. Knowles recommends that media should involve learners in making decisions about what they are going to learn, how they are going to learn it, when they are going to learn it, and how they are going to verify that they have learned it. Knowles states that the andragogical model is more effective than those in which all these decisions are made for the learners.

Clear telecourse evaluation procedures do not exist in the literature (Bates, 1974; Kressel, 1986; Holt, & Portway, C. Lane interview, April 1, 1989). A critical analysis of what is effective when delivered by technology is unavailable according to Kressel (1986) and Bates (1987b). Distance educators could not recommend and are not using a telecourse evaluation model or instrument (Kressel, 1986; Bates, 1983; Holt, 1989; Portway, 1989). A strategy for decision making is needed (Bates, 1987b).

Telecourse adoption personnel are composed of instructors and others who may not have media selection skills (Jones, 1965; Unwin, 1969; Tanzman & Dunn, 1971; Kemp, 1975; Heidt, 1978; Meierhenry, 1981; Knowles, 1983; Lewis, 1985; Kressel, 1986; Mayor & Dirr, 1986; Bates, 1987b; Holt, 1989; Portway, 1989). There is a need to help faculty master and utilize new resources and techniques (Mayor & Dirr, 1986; Kressel, 1986; Bates, 1987b; Holt, 1989; Portway, 1989).

As a result of these factors, telecourse adoption is not grounded in empirically based methodology (Kressel, 1986; Reiser & Gagne, 1983; Teague, 1981; Bates, 1987b; Holt, 1989; Portway, 1989). Kressel asks, "What is a credit-worthy telecourses vs. slick television?" and "What is sound education vs. entertainment? (p. 6, 1986)." She concludes that there is no evaluation procedure to use which ensures that students will learn from the telecourse and thus no current answer to the question, "Is it sound education worthy of credit?" Bates (1974) contends that the wrong criteria have been applied to judge the value of a program.

As the cited literature suggests, the message that an evaluation method should be established has been regularly repeated since the inception of the telecourse. With over 300 telecourses (Brey, 1988) and 350,000 pieces of instructional media available, choosing suitable material is a

problem (Bernard, 1974; Sive, 1978; Holt, 1989; Portway, 1989). A review of the literature on media selection guidelines for use by pre-school through post-secondary instructors did not provide a method (Teague, 1981).

The method most used for adoption is for an administrator to identify available telecourses in the content area by contacting known producers or distributors; thirty-minute preview tapes and printed materials are given to the adoption committee or instructor(s) who make the decision to adopt the telecourse. They also make the decision to adopt, reject, modify, select or produce new textbooks, study guides, syllabi and other material (Zigerell, 1986).

Teague (1981) strongly suggests that an evaluation instrument should reflect specific criteria and force the evaluator to apply the appropriate criteria to the resources. Teague performed an analysis of evaluation forms in the current literature and concluded that several factors tend to limit their effective use on a broad scale by post-secondary institutions (1981). Chief among these limiting factors are that most forms: 1) are for use with elementary and secondary materials; 2) evaluate one medium; 3) ask for general conclusions; 4) include no reference to evaluative criteria; 5) ask for excessive amounts of non-evaluative information; and 6) are too detailed and lengthy to be of practical use (Teague, 1981).

Purpose of the Study

It was the purpose of this study to create a media selection model for credit telecourses and an evaluation instrument base upon the model to be used by post-secondary personnel involved in telecourse adoption.

Method - the Delphi Technique

The Delphi technique was chosen to develop the telecourse evaluation instrument because it systematically elicits and collates expert opinion (Sackman, 1974). The technique aided the formulation of group judgment for subject matter in which precise information is lacking. The technique aided in the identification of problems and solution, defined and clarified issues, established priorities, and evaluated solutions. The basis for the method rests on the assumption

that expert opinion exists and that many experts are better than one (Harman, 1975). It tends to build group consensus through the process of inquiry and feedback as respondents examine their positions several times (Helmer & Rescher,1959; Brown, 1968; Sackman, 1974).

The first instrument was based upon the review of literature and contained a representative group of 23 questions (Brown, 1968; Dalkey, 1969a, 1971b; Harman, 1975). Respondents were asked to make comments and to freely edit the representative group of questions so that the problem and its eventual solution are stated properly (Brown, 1968). Respondents were asked to suggest subsidiary questions whose answers would be helpful in formulating the solution so that the entire group could consider a statement's importance to the solution and arrive at a consensus opinion (Brown, 1968). Consensus is desirable as it makes acceptance and implementation of findings easier (Dalkey, 1969a; Borg & Gall, 1983). Delphi proponents stress three technique attributes which contribute to authentic consensus and valid results; respondent anonymity, statistical response, and iteration with feedback (Dalkey, 1969a).

Formulation of the problem is accomplished through the design of the questionnaire and it's experimental implementation. Solution testing includes iterative field administration, feedback from respondents, and scoring of responses to the survey. The last stage involves the interpretation of results in communicating findings to others (Sackman, 1974).

Major Findings

Evaluation Instrument. No standardized, empirically based, or acceptable telecourse selection model or instrument was provided by the respondents. Telecourses are not being evaluated as part of the pre-adoption process using any clearly defined criteria. Only one percent (n=4) of the first round respondents have a pre-adoption telecourse evaluation instrument. Of these four, all are locally developed and are not empirically based; two are in use, one is in draft form and not yet in use, and the fourth is for use with satellite delivered K-12 live programming.

Based upon the lack of evaluation done in any phase of the use of a telecourse and the remarks from respondents, there is a need for a pre-adoption evaluation instrument for telecourses. Respondents noted a variety of situations which included not using an evaluation form, considering

the use of an evaluation form, or that they had used a very "simple" form. One respondent wrote, "I must admit, it has been difficult to find programs that meet these criteria. Too often we have to settle for what is available." Another respondent concluded that "we could certainly use this tool" and another added that it was a "very necessary instrument."

The lack of instrumentation submitted by respondents supported statements by Kressel (1986) Holt (1989) and Portway (1989) that clear telecourse evaluation procedures do not exist. The fact that telecourse adoption is not grounded in empirically based methodology (Kressel, 1986; Reiser & Gagne, 1983; Teague, 1981; Holt, 1989; Portway, 1989) was also supported by the lack of instruments submitted for the study as well as respondents' comments.

Media Selection Models. No media selection models were cited or referred to by the respondents.

Student Evaluation. The primary form of evaluation being conducted is with students after the telecourse has been taken. Primarily these are computer scored instruments used in all campus courses and are not necessarily specific to telecourses. Telecourse student evaluation instruments center on the entire video instruction program, instructor evaluation, student demographics, and advertising media preferences of students for future advertising purchases. Approximately one third of the respondents felt it important to have students evaluate a telecourse in much more detail than had been given to the telecourse when it was leased or purchased. Only one institution provided a statistical composite of the student evaluations. Bates (1974) notes that students are a weak source of possible improvements as they are not usually able to judge the relevance of the program material nor do they usually know enough about the subject matter to suggest appropriate alternative methods to teaching.

Grounding in Media Selection. The study confirmed that there is a lack of knowledge in media selection for most adoption personnel who are responsible for telecourses. This was supported by knowledge scores in which respondents self-ranked themselves. The mean knowledge for the first round was 3.4 with an average of 62 respondents marking their knowledge at four; for the second round the mean knowledge score was 3.4 with an average of 62 respondents marking their

knowledge at four. The lowest scores were recorded in the statements regarding computer software. Few respondents made comments in this area.

Their collective knowledge was highest in areas regarding print and language. This supported statements in the literature review that telecourse adoption personnel are composed of instructors and others who do not have media selection skills. Based upon the knowledge scores it is plausible to say that most of the respondents are generalists in the educational field. This was confirmed to some extent by the degree level and field supplied by the respondents. Approximately one-third hold an educational technology or mass communication degree, one third hold a degree in education, and the final third hold degrees from business schools or arts and sciences degrees.

The Distance Education Media Selection Model

The purpose of this study was to clarify the criteria for a distance education media selection model. Based upon that model an evaluation instrument was created. The media selection model created by this study and its evaluating instrument require evaluators who use it to apply specific evaluating criteria to the telecourse to determine the suitability of its use in the video instructional program (Teague, 1981). The model and the evaluating instrument consider the combination of media and factors related to the general organization of the instructional program, factors relating to the video programs, and factors related to the learner (Bates,1980). The model and instrument are for use with post secondary materials to evaluate more than one medium; ask for specific conclusions; are based on evaluative criteria; do not ask for non-evaluative information; and is short enough to be of practical use (Teague, 1981).

This section discusses the model which was created by the study and implications of the findings where they are apparent, including implications for rejected criteria. The sections include educational objectives, instructional design, content, textbook, faculty guide, student study guide, computer software, video, and cost.

Educational Objectives. The educational objectives section is composed of student and institutional segments. The student segment supports Myers (1972) that the student should be central to the learning experience. The student segment states specific objectives for the overall

telecourse and each component (Brown, 1972). Objectives should be stated in cognitive, affective, and psychomotor terms (Sive, 1978) which are appropriate to the content (Lesser, et al, 1972). The level of difficulty should be appropriate for the content as well as the learners (Erickson, 1968; Sive, 1983) and should be achievable by the average learner (Lesser, et al, 1972) and measurable under specified conditions (Brown, 1964). Additionally, the telecourse should meet students needs for required or elective courses (NEA, 1976). Four of the six educational objectives statements concern students. There is a focus on educational outcomes which requires a specificity from telecourse producers.

The second education objective segment is institution centered and concerns the equivalency of the telecourse to the on-campus course, as well as the ability to adapt the telecourse if the dissimilarities are too great. The adaptability is a theme which reoccurred in the faculty guide and student study guide sections of the model. Many video instructional programs operate under regulations which require that a telecourse can be offered only if the course already exists within the curricula and it is for this reason that equivalency and adaptability become important. One respondent suggested that equivalent courses are more easily accepted by on-campus administration. Determining the percentage of equivalency was suggested by one respondent. At least three respondents noted that equivalency was not a problem for their programs and they have the authority to create curriculum based upon available telecourses. Inherent in the consensus for the equivalency segment is an implied warning for those who operate with course creation authority; they should investigate what circumstances brought regulations to other coordinators so that they are able to prevent imposed regulations.

Since the question of equivalency and adaptability to an on-campus course is a high priority based upon the high expert consensus (87 and 85 percent), this has immediate implications for telecourse producers as they will find a larger market for telecourses which are similar to existing post secondary curricula than they will for courses which are dissimilar. Course content which may be equivalent or easily adaptable include mathematics, poetry, or philosophy. Since respondents endorsed the concept of educational objectives achievable by the average learner, they should

determine what that means for their current and potential post-secondary clientele so that they do not produce telecourses with a difficulty level inappropriate for their intended market.

Instructional Design. The model's instructional design section considers the instructional design of the telecourse as well as specific components and their relationship to the telecourse. In using this section to evaluate a telecourse, evaluators will need to consider the overall telecourse and apply specific questions to each component. Segments of the instructional design section include telecourse and components, teaching strategies, lesson size, student interaction, visuals, language, and assignments.

Receiving one of the highest expert consensus agreement scores at 97 percent was the statement that the telecourse be fully planned and logically organized (Erickson, 1972). A plausible reason for this high consensus is that the telecourse and its components are expected to be self-contained and require very few additions by the local telecourse staff. Major input by local staff would reduce the cost-effectiveness of using a telecourse. Each component should be necessary (Sive, 1983), coordinate well with the rest of the telecourse and accomplish the individual objectives for which it was designed (Lesser, et al., 1972).

The teaching strategies segment of instructional design reinforces the focus of telecourse evaluation as learner centered. As part of the evaluation, it recommends using teaching strategies appropriate for traditional (NEA, 1976) and adult learners (Knowles, 1983). One statement specifically questioned whether the inclusion of self-directed learning strategies should be part of the overall evaluation and received an expert group importance score of 83 percent. Based upon the comments and scores in all statements about self-directed learning and adult education, the respondents were comfortable and accepting of the concepts of self directed learning but did not equate these with principles of adult education which also encourage self-directed learning (Knowles, 1975) and specifically the use of learning contracts with telecourses (Knowles, 1983).

Respondents objected to the use of the word "adult" despite the fact that U.S. Department of Education (1987) figures that show that 10 million of America's 12 million college students are adults, 40 percent of all college students are over 25, and over half of all enrolled students attend

college part time. Despite the objections, statements which contained adult education principles, methods or teaching strategies reached consensus except for the use of learning contracts. The use of self-directed learning contracts (Knowles, 1983) was rejected with an expert score at 71 percent. Only 35 respondents ranked themselves as having expert knowledge in the adult education field and only 25 of the 35 in this group ranked learning contracts at a high importance of four. Based upon the number of respondents ranking themselves with high knowledge as well as the low group knowledge and importance scores, there is little knowledge about learning contracts in general or specifically how they can be used with telecourses. This supports Knowles' (1983) statement that the use of media for adult education is based upon the pedagogical model of education in which the learner is not responsible for making decisions about what, how , and when they will learn, and how they are going to verify that they have learned it, which is the basis of self-directed learning contracts.

One statement specifically questioned whether teaching strategies should be evaluated for their ability to reach all student learning styles as there are students who prefer to learn through visual, auditory, tactile (hands-on), or kinesthetic (emotional experiences) methods (Meierhenry, 1981). The statement received an expert importance score of 80 percent and a 48 percent group importance score. The comments for this section and the lower group score suggest that the concept of learning styles and how they may be applied to telecourses may not be well understood. Respondents perceive that visual and auditory styles can be addressed through telecourses but do not perceive that tactile, kinesthetic, or interactive styles can be addressed through all components as well. For example, DeNike & Stroether (1976) suggest using realia (real objects) for tactile students, and Lundgren, et al., (1972) recommend providing emotional experiences for students. Haney & Ullmer (1975), Knowles (1983), and Curtis (1989) suggest that interaction can be accomplished by actively involving learners through writing, talking, manipulating, competing, and cooperating. Bretz (1971) suggests that the ability to provide corrective feedback for individual learners is important and notes that any medium can provide corrective feedback by stating the correct answer which allows comparison of the two answers.

Interaction, as a teaching strategy, is supported in the model. The specific statement recommends encouraging learner interaction with the content by posing challenging questions and providing answers when appropriate; through written assignments, and other techniques which motivate learner participation (Haney & Ullmer, 1975). The last phrase opens the concept of interaction to many different teaching strategies. As the media become increasingly interactive, evaluation for interactive strategies should also become more demanding. Aspects of interaction which are not included in the statement is the immediacy of feedback which can be aided by a quick turn-around time on marking students' assignments, or the learner controlled ability to branch to alternative units of instruction (Boucher, et al., 1973) on a computer controlled videodisc or computer software learning resource.

The final teaching strategy suggests that components should encourage critical viewing, reading, and thinking (Lundgren, et al., 1972). Lundgren, et al., (1972) suggests that components should avoid using many facts so that students find contexts and causal connections to create the students' ability to analyze critically what they see and hear and to help them find their own way to knowledge.

A separate aspect of the instructional design evaluation should review the lesson size, number, pace, depth, and sequence of lessons and their appropriateness for the content and the learners (Curtis, 1989). The basis for this question were statements by Schoch (1983), Wong & Wong (1978-1979), and Curtis (1989) which recommend that the size of the first two lessons should be shorter and the others easily managed - not too long or difficult - as this tends to discourage students.

All components should be evaluated for the use of appropriate visuals and whether they contribute to student learning (Reiser & Gagne, 1983).

Language in all components should be appropriate for content as well as for learners, and should be interesting, understandable and similar throughout (Northcott & Holt, 1986). In the video component, language should be evaluated for the effectiveness of delivery, should be well-phrased, and easy to listen to (Lesser, et al., 1972). Language for print components should be readable (Northcott & Holt, 1986).

The final segment of instructional design evaluation criteria concerns assignments which should be specific to content and distance learning with a balance of experiential and passive learning (Knowles, 1983). Again, the focus is learner centered. Not included in the statement is the concept that early assignment due dates ranging from 14 days to 40 days may increase students' chances of completion (Pfeiffer & Sabers, 1970; Wong & Wong, 1978-1979; Armstrong, et al., 1985; Billings, 1987).

Content. Content evaluation criteria include the appropriateness of the content to the telecourse title, description of the telecourse, and credit hours generally granted for the telecourse (Armstrong, 1973). The statement was retained; the expert importance score was 94 percent. Content should also be evaluated for accuracy, clarity, comprehensiveness, and balance (AASL, 1976). The term "balance" as it is used in the literature meant that differing viewpoints should be provided (EPIE, 1973; AASL,1976); controversial issues should be handled fairly without evidence of bias (Erickson, 1972; AASL, 1976); and that the pluralistic society of multiple ethnic, racial, religious, social, geographic, and sexual characteristics should be represented (AASL, 1976; NEA, 1976; EPIE, 1973). The content should be current (Sive, 1983), and well-documented (Armstrong, 1973). Statements about the appropriateness (Armstrong, 1973) and accuracy of the course content (Erickson, 1972) were supported and received scores of 94 and 96 percent respectively.

Grossman (1987) observes that because of costs, producers have a tendency to design courses with a long shelf life, but this was not the recommendation of the telecourse producers who responded to the survey with two and three year shelf life recommendations. Three questions which were of great interest to the respondents concerned the expected shelf life of the program. The first round statement recommended a five year shelf life and elicited many responses which ranged from under five years to over six years. When this multiplicity of responses was analyzed it became apparent that two sets of values were being discussed. The first value was to offer current information to students in the tradition of the best universities. Respondents seemed able to draw a clear line between subjects with short shelf lives such as engineering and long shelf lives such as philosophy or English. The second value was the cost of leasing a program, purchasing duplicate

tapes which could run well over $500 for 3/4" broadcast masters, paying instructor development fees, and producing local study guides. Obviously cost-effectiveness requires that a course with high front-end costs have a shelf life of several years in order to at least break even. Several respondents suggested that they needed a longer shelf life because only after the first year the course was offered did student enrollments increase to a point where the course might break even. Obviously these statements also involve how much budget can be allocated to advertising to potential students.

To attempt to clarify this question in the second round, the statements were separated according to the stability of the course content and further separated by video and print components. All three statements regarding shelf life were rejected with expert consensus scores ranging from 69 to 74 percent. A related question dealt with the avoidance of the use of visual elements which would date the program and could help define how long the shelf life might be. This statement had minimal expert consensus at 58 percent and was also deleted.

This portion of the study has implications for both telecourse users and producers. Producers responding to the survey indicated that a two to three year shelf life could be expected; users indicated that they needed telecourses with a much longer shelf life because of the costs involved. Since all questions regarding minimal shelf life were rejected, producers should investigate aspects of the telecourse which most directly affect the shelf life. If these aspects could be minimized, it is likely that they will find more post-secondary institutions which are willing to use this learning resource. It is feasible that content aspects which seem to be have the shortest shelf life could be contained in one video program or in supplements to the print components. These could then be updated as required at minimal expense to producer or user.

Textbook. Evaluation criteria for the telecourse textbook are as follows. The textbook should be designed and written for the telecourse or correlate well with it. Textbook revisions match video revisions (Levine, 1987). The textbook should facilitate student comprehension (Stoffel, 1987) through language (Northcott & Holt, 1986) and pace appropriate for the course and learners

(Levine, 1987). The cost should be reasonable for students (Reiser, 1981) and the textbook should be available from the publisher at the scheduled time (Levine, 1987).

A statement about the wide use of the textbook (Levine, 1987), its status as a classic (Brey, 1988), and publication recency (Levine, 1987), was deleted with an expert importance score of 71 percent. One respondent asked why it needed to be widely used, one noted that it was "highly desirable for adoption," and another suggested that general usage lends credibility and adaptability. These responses may suggest the polarity which appeared in the group consensus scores where 50 percent marked it as highly important.

Faculty Guide. Evaluating criteria for the faculty guide include segments which cover content of the faculty guide, specific criteria about the test bank, revisions and adaptability.

The contents of the faculty guide should specifically be evaluated for its segments for new faculty, faculty responsibilities, objectives for the telecourse and each component, instructional design, lesson outlines, a variety of assignments which encourage involvement , and optional syllabi for different texts, settings, and semester lengths (Levine, 1987). Content should also be evaluated for teaching strategies appropriate for content for traditional and adult learners, student level, student needs (Levine, 1987), and strategies for use for seminars, telephone meetings, letters to student, grading, and other forms of instructor feedback to distance learners (Finkel, 1982).

The test bank should be evaluated for the clarity of objective and essay questions (Levine, 1987) relevancy of questions to objectives and content (Diamond,1964), and whether tests specifically include questions on video, text and other components (Diamond, 1964). Test keys should be included as well as the location of the answers in the content and test validity (Northcott & Holt, 1986). Test formats should be evaluated for their appropriateness for at home tests, proctored testing (Diamond, 1964), and computer grading (Northcott & Holt, 1986).

The faculty guide should have been updated if the textbook or the video has been revised (Sive, 1983). The format of the faculty guide should allows changes by the user institution (Zigerell, 1986).

A statement which respondents rejected concerned segments about distance learning (Rekkedal, 1982), learning from TV (Lesser, et al., 1972), self-directed learning (Knowles, 1983), and student isolation (Finkel, 1982). The expert importance score was 73 percent. Comments to the statement did not clarify why it was rejected but only suggested that the school should have a local guide for these segments and that the material is available elsewhere.

Student Study Guide. Evaluating criteria for the student study guide are composed of learner centered statements, and one institution centered statement. The student study guide should be evaluated on whether or not it contains segments on objectives, components, lesson outlines, video outlines, glossary, key concepts, references, exercises, self-tests with explanations (Levine, 1987), self-directed learning strategies (Knowles, 1983), and activities to pursue personal interests appropriate for the content (Quinn & Adams, 1989). It should be evaluated upon how well it contributes to the learner achieving objectives as it serves as the student's personal tutor and directs learning from the components (Quinn & Adams, 1989). The cost should be appropriate for students (Reiser, 1981).

The institution should also evaluate the student study guide on whether its format allows changes (Levine, 1987). Brey (1988) reports that student completion rates increase by 10 percent if the guide is written by the instructor and Quinn & Adams (1984) suggest augmenting the study guide depending upon the curriculum. This is an important evaluating criteria if the institution can only offer telecourses which are equivalent to existing curricula.

Computer Software. Criteria for computer software focus on student learning and institutional considerations. Evaluating criteria for computer software substantiated by the model recommend that the software be appropriate to content and contribute to students achieving educational objectives (Dirr, 1986). Versions and documentation should be available for most campus and student computer systems (IBM, Apple, Macintosh) (Dirr, 1986). Software should be evaluated for its level of difficulty being appropriate for students' computer literacy. Software should be user friendly, and error free (Dirr, 1986). Site and home licensing should available (Dirr, 1986) at a cost appropriate for the institution and students (Reiser, 1981).

On the first round statement about computer software having many versions as well and as site and home licensing available, two of the lowest median scores were recorded for importance at 3.0 and knowledge at 2.9. While improved, this trend continued into the second round. Given this group's familiarity with video technology which is increasingly controlled by computers, this was a surprising finding. Comments indicated that very few of the telecourse programs were using computers. Many programs are available and appropriate for use with a wide range of curricula. Telecourse administrators need to take a leadership role in facilitating the use of computers by their students since it is becoming a mandatory skill in the workplace.

Video. Criteria for evaluating the video portion of a telecourse includes segments on technical quality, program length, treatment and student learning.

There were two statements on technical quality which received expert consensus. One stated that the video technical quality should meet professional broadcast quality standards (Erickson, 1968) which received an expert consensus score of 82 percent. The second stated that video technical quality should meet professional broadcast quality standards appropriate to the delivery method (cable, ITFS, broadcast, learning center, etc.) (AASL, 1976) and received an expert consensus score of 90 percent. There has been a long-standing discussion over aspects of video technical quality which involves the learning differences, if any, between educational programming produced with low or high production values. In the study, opinion about this aspect of telecourses polarized into two areas. One group strongly believes that production values are acceptable if they fit the delivery method and are produced at an institution's studio with average equipment. Group scores for this option were the highest at 80 percent consensus. The second group strongly believes that production values must meet broadcast quality standards since students are exposed to this programming daily and will judge educational programming by their experience with commercial television. Group scores for this option were lower at 68 percent. It was expected that either the broadcast quality statement or the delivery quality statement would not have received expert consensus. The implication of these scores for producers is that in order to serve a market

with mixed needs that they will need to produce telecourses which meet broadcast quality standards which will increase production and telecourse costs.

A related component recommends specific production evaluation criteria which include high production values so that the production becomes invisible; production values include appropriate camera shots, good lighting, color balance, motion sequences, appropriately used special/digital effects, consistently good level of audio, and clean editing (Lesser, et al., 1972). A statement was rejected at an expert consensus score of 76 percent which included evaluating criteria for sound and its value in adding appropriate variety and setting pace (Curtis, 1989).

A second evaluation criteria concerns program length. Respondents confirmed that program length should fit standard periods such as 30 or 60 minutes (as opposed to 19 minutes or 47 minutes which do not fit 30-minute programming periods) (Dirr, 1986) but rejected statements that individual programs should be 30 or 60 minutes long (Dirr, 1986). Written comments suggested that many respondents do not broadcast telecourses and program length is not important if students view programming on loaned tapes at home or in learning centers. Annenberg/CPB (1985) research showed that students preferred 60-minute broadcast programs because they found it easier to schedule their viewing time in larger blocks of time. No comments were made about student preferences on either survey. However, this does not preclude scheduling two 30-minute programs consecutively to provide a 60-minute viewing experience for students; 30-minute programs are more adaptable to broadcast and cablecast scheduling which may require breaks for advertising. This finding has implications for the design of programs and broadcast scheduling. These scores seemed to confirm Rescher's (1969) statement that Delphi cannot force latent consensus if it does not exist and Herman's (1975) statement that lack of consensus may reflect the issue's complexity.

Also rejected was a statement that a total of 15 hours of video programming is ideal (Dirr, 1986) which documented the fact that there is a new factor emerging which will exert control over the use of telecourses. Some accrediting agencies, state governments, and consortia are setting student contact hours at 45 hours, the same number of hours required for traditional classes. This has made

the traditional 15-hour telecourse (Brey, 1988) unacceptable to institutions operating under these regulations. Respondents reported that additional projects and papers cannot be substituted for contact hours. As a result, the 15-hour telecourse will carry only one credit hour and respondents felt that students would not register for one credit hour. One respondent who produces telecourse wrote: "We have been unable to identify any demonstrably "ideal" amount of video for a "telecourse". First of all, there is the problem the variety of definitions (models) of a college-level "telecourse". The number of hours of video that might be ideal (appropriate) instructionally for one model might be inappropriate for a different model. Then there is the problem of what constitutes the minimum amount of video in an instructional system and still permits it to be described as a "video-based" or "video-augmented" system. The "ideal" is probably that amount of video which best enables the targeted learners to achieve well all stated goals/objectives of the telecourse in concert with all other essential element: textbook(s), readers, study guides etc. "We are operating successfully telecourse systems having from seven to fifteen hours of video for a three semester credit-hour course." One question on programming length will be included in the final questionnaire to replace statements 51, 52, 53, and 54 so that evaluators will consider local conditions and regulations.

This finding has immediate implications for the design and production of programs, broadcast scheduling, and telecourse funding. It is also a warning to telecourse administrators that the 45-hour contact regulation may be applied to their program. Respondents who have had recent experience with this are concerned because it increases their tape duplication costs by two-thirds (from approximately $500 to $1500 per course), it will be difficult to replace all 15-hour courses with similar 45-hour courses, and broadcast time may be limited, thus reducing the number of replays to which students will have access. In some cases, the institution pays for the broadcast time and these costs will also increase by two-thirds if three replays are maintained. A possible solution to this extraordinary increase in costs may be audio tapes which contain lectures, panel discussions, interviews, case studies and other material appropriate to the course content, the learner and the

audio only medium. Another alternative might be for local instructors to conduct classes via telephone audio bridges.

The expert group consensus was 57 percent that 15 hours of video programming is ideal. Brey's (1988) research showed that 81 percent of telecourses had between 13 and 15 hours of video. If the current 15-hour telecourse is to be defended, the defense will have to be based on the quality and excellence of the telecourse. Ultimately, it is likely that it will require the support of research which shows that a telecourse with all of its components is the educational equivalent of the traditional classroom and 45 student contact hours. Chu and Schramm (1967) and Kumata (1961) pointed that there are over three-hundred research studies documenting that learning does take place at equivalent or higher levels through media as compared to traditional classrooms. However, the question now specifically regards the number of hours required which appears to be a new problem.

A third criteria for video programming is the treatment and its appropriateness to content. Treatment includes formats such as documentary, lecture, discussion, panel, drama, humor, etc. and should not exclusively use a lecture or “talking head” format (Curtis, 1989). The dialogue should be believable (Lesser, et al, 1972).

Specific aspects of treatment which should be evaluated should include reviewing the television program to determine if the same message is given in spoken words and video (Schramm, et al., 1967). Lesser, et al., (1972) recommends that the same thing should be said more than once in different ways so that cross-modal reinforcement should occur frequently where the same message is given through two modalities - words and pictures to replicate the central points to be learned (Bruner, 1969; Schramm, et al., 1967; Lesser, et al., 1972).

A related aspect of treatment are presenters used in the program. Criteria for evaluating the video Instructor(s) is that he or she should be a skillful presenter with content expertise who communicates a sincere enthusiasm for the subject (Lundgren, et al., 1972). Actors are competent in their craft (Lesser, et al., 1972). A statement regarding experts being nationally recognized or acknowledged leaders in the field (Levine, 1987) was rejected with an expert importance score of

45 percent. This has implications for telecourse producers who use experts and widely advertise their participation. The scores for this statement and the comments show that many respondents do not buy telecourse rights because of an experts appearance or participation in the program. While one respondent noted that this was important for course adoption another wrote "Unless (the) objective is to recognize 'experts' they are of little help. Often (they) are just abstract 'talking heads.'"

The video program should be evaluated to ascertain if it enriches learning with real-life application of theoretical content by conducting video experiments and demonstrations in realistic settings (industrial laboratory, office etc.) or video field trips to realistic locations (museums, factories, clinics, etc.) (Lundgren, et al, 1972). Lundgren, et al, (1972) recommends that the video should use the medium's unique possibilities to give students content that they would otherwise not get or see.

Two student centered evaluating criteria which were confirmed are that content understanding should be advanced by video by providing appropriate pace (Lesser, et al., 1972) and through the Imaginative use of voice and sound (Lesser, et al., 1972).

Cost . Evaluating criteria for cost factors include available funding, learner identification, licensing and tape duplication. The cost of the telecourse should be appropriate for the available funding. Target learners and enrollment potential should be identified (Sive, 1983). The licensing contract should be appropriate for the institution's delivery methods and length of use. Tapes should be easily accessible for duplication and in excellent condition (Levine, 1987).

Statements about profit projection (Sive, 1983) and cost effectiveness of telecourses on the same subject (Brown, et al., 1972), and inclusion of marketing concepts and materials (Levine, 1987) were rejected by respondents. Given the shrinking resources of most post-secondary institutions it was surprising that distance educators did not reach a higher consensus on these statements. A plausible reason for the rejection of profit projection may be that it is very difficult to determine the break even point when it may take two to three years to reach the point. The comparison of costs between telecourses with similar content may have been rejected as there are

still too few telecourses where content is duplicated; it is expected that this will change in the future (Forrer, 1986).

Applications

It is expected that the final survey instrument will be used primarily by post-secondary educational institutions and consortia which grant credit for telecourses to aid in the selection of pre-produced telecourses during the pre-adoption phase. Primarily, the instrument will be of use to United States institutions, but it should be usable in English speaking countries and through translation could be used in other countries. It would be appropriate to use the instrument as the basis to establish standards of quality and excellence for telecourses where none exist.

It will aid producers in producing telecourses that will meet accepted standards of excellence established by their consumers. Since several national producers and distributors of telecourses played a significant role in constructing this instrument, it is possible that the instrument would be adopted by them and distributed with their preview packages.

While this study has focused specifically on telecourses, the model and instrument can be used by organizations such as companies which use pre-produced programming for employee training. As more courses are broadcast over state borders by live satellite, producers of these courses and teleconferences will benefit from producing their programs using the standards set in this model. As the training function is expected to prove its cost effectiveness, the instrument could aid in developing educationally sound training programs for these networks. Currently no standards of quality or excellence exist for teleconferences or credit courses which are usually more expensive per hour than pre-produced telecourses.

K-12 public schools could use the instrument with some modification as an increasing amount of programming is being delivered live by satellite to schools in remote areas and the inner city. It is not likely that instructors and administrators in these areas will have good media selection skills. School librarians responsible for media resources and learning centers should also find the instrument useful in their media selection duties.

Recommendations for Further Research

The review of literature suggested that there is very little research done in distance education. Because the area continues to expand and is perceived as a viable way to offer educational programming to the masses of Americans that must be educated or retrained, it is imperative that more research be conducted in the following areas.

Follow-up studies should be done with respondents to determine if the instrument has been useful and if there are modifications which should be made to the instrument.

Immediate research should be done to determine the ratio of hours required to have equivalency between telecourse hours and traditional classroom hours. Research should determine whether 30-minutes of telecourse programming is equivalent to one hour in a traditional classroom. Traditionally, student classroom contact is set at 45 hours for three hours of credit. The telecourse norm for student contact is 15 video hours.

The study showed that there is little understanding of adult education principles as they relate to distance education. Further research should determine if adult education principles do work in distance education. Specifically the areas of interaction, self-directed learning, and the use of learning contracts need to be research.

Further research should be done with telecourse students. Only 27 percent of the respondents were conducting post-course evaluation with telecourse students. A number of post-course evaluation studies have been conducted with students taking telecourses produced by the Annenberg/CPB Project. However, no other studies of this magnitude have been conducted by other telecourse producers and made available for public use.

There is minimal understanding about how learning styles apply to distance education. Educators perceive that visual and auditory styles can be addressed through telecourses. They do not perceive that interactive, tactile or kinesthetic styles can be addressed through all components. Research in this area should ascertain if all learning styles can be addressed through telecourses.

Some research has shown that student attrition rates are reduced if local instructors write the study guide. Research should ascertain if this is a factor in attrition as well as what type of information a student needs in the study guide to motivate the student to course completion.

Some research has shown that the student's sense of isolation contributes to high attrition. Research should ascertain what the specific factors are that contribute to isolation and how they can be effectively addressed by a distance education program. Some research has shown that telephone meetings with the instructor, letters from the instructor, and other contacts can reduce the sense of isolation as well as lower attrition.

Further research is needed to determine whether the textbook must be specifically written to accompany the telecourse or whether other texts are as effective for the student. There is a perception that the text should be written specifically for the telecourse which was not substantiated by this study.

As there is confusion over who should produce portions of the faculty guide dealing with distance education, self-directed learning, student isolation, and distance teaching strategies, further research is needed.

The optimal size of assignments, frequency of assignments, and time frames in which assignments should be filed needs clarification. There is some research which suggests that if students turn in assignments from 14 to 40 days from the beginning of the course, they will complete the telecourse. This research needs to be replicated and the acceptable filing dates of the first assignment should be narrowed.

The realm of student motivation to complete distance education courses needs research. There is a perception that only motivated students will complete. There is some research which suggests that instructor contact is the motivating factor.

In the area of production, further research needs to be done on effective education strategies where only video is used. Producers need to know when graphics intrude or contribute to instruction, when music is effective in setting the pace or motivating the student to continue to pay attention, whether instructors should be paid actors or instructors, when certain treatments work, if

learning from television is different form other types of learning and finally, if a "talking head" is effective and if so what makes him or her effective.

The final recommendation for future research involves the differences, if any, between educational programming produced with low or high production values.

Further Study Recommendations

The instrument now has face validity. An exploratory factor analysis is suggested to determine the actual number of traits measured by the instrument. This will provide evidence of construct validity. It is also recommended that reliability studies be conducted with the instrument.

If this study is replicated or continued, it is suggested that the time frame between survey rounds be extended. While two weeks were allowed between the first and second there might have been more responses if the time was extended or if the research was conducted in the middle of a semester.

It is probable that some respondents ranked themselves too low while others ranked themselves too high. This is a variable over which there is little control in the experimental sense. Future studies should gather more information on the real level of knowledge and correlate it with the self-ranked scores.

This study gathered the expertise of telecommunications experts in the distance education field, as well as telecourse coordinators; a study conducted only with telecourse coordinators may have different results.

Conclusions

The media selection model created by this study and its evaluating instrument contain nine sections so that evaluators using it will be required to apply specific evaluating criteria to the telecourse to determine the suitability of its use in the video instructional program (Teague, 1981). The model and the evaluating instrument consider the combination of media and factors related to the general organization of the instructional program, factors relating to the video programs, and factors related to the learner (Bates,1980).

Because of regulations which are being imposed on video instructional programs, the use of telecourses may require new formats. The most significant of these is a telecourse that provides 45 student contact hours so that three hours of credit can be granted.

The literature suggests that distance education is in an expansion phase with many new postsecondary institutions joining the ranks of those which are currently offering telecourses. Because many telecourses are available, adopters must make decisions about the quality of the programming and related components. As a form of media, distance learning materials have an equal need for effective evaluation. Evaluation of software is critical to ensure that quality materials are purchased which meet course objectives. This media selection model and its evaluating instrument should be an aid in the adoption process and ensure that standards of quality and excellence are considered.

Reference List

American Association of School Librarians (1976). Policies and procedures for selection of instructional materials, Chicago.

Anderson, Ronald H. (1976). Selecting and developing media for instruction. New York, Van Nostrand.

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.

Armstrong, M., D. Toebe and Watson, M. (1985). Strengthening the instructional role in self-directed learning activities. Journal of continuing education in nursing 16(3): 75-84.

Annenberg/CPB Project (1985). Research on Student Uses of the Annenberg/CPB Telecourses, Washington, D.C., Annenberg/CPB Project.

Bates, Anthony, (1974). Obstacles to the effective use of communication media i a learning system. Keynote address to the International APLET Conference, Liverpool University. Paper No. 27.

Bates, Anthony, (1975a, July). Designing multi-media courses for individualised study: the Open University model and its relevance to conventional universities. Speech at the Northern Universities Working Party for Co-operation in Educational Technology at Grey College, University of Durham, July, 7, 1975. IET papers on broadcasting; Paper No. 49. Open University, England.

Bates, Anthony, (1975b, November). The British Open University: Decision-Oriented Research in Broadcasting. Speech to the National Association of Educational Broadcasters Convention, Washington, D.C. November 17, 1975. Milton Keynes, Great Britain, Open University. IET papers on broadcasting: Paper No. 53.

Bates, Anthony, (1980). Towards a better theoretical framework for studying learning from educational television. Instructional Science, 9, pp 393-415,

Bates, Anthony, (1982). Roles and characteristics of television and some implications for distance learning. Distance Education, 3, 1, pp 29-50.

Bates, Anthony, (1987a, May). The Open University: Television, learning and distance education. Text of inaugural lecture, Open University, May 29, 1987.

Bates, Anthony, (1987b, September). Teaching, media choice and cost-effectivenss 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.

Beaudoin, Michael, (1985, April 24). Chronicle of Higher Education.

Bergeson, John (1976). Media in instruction and management manual. Central Michigan University, Mt. Pleasant, MI, ED 126-916.

Berkman, D. (1976, May). Instructional television: The medium whose future has passed?" Educational Technology, pp. 34-43.

Bernard, Edward G. Evaluating media resources for urban schools. In Hitchens, Howard, Ed. , (1974). Selecting Media for Learning: Readings from "Audiovisual Instruction," Washington, D.C. Association for Educational Communications and Technology. Reprinted from Audiovisual Instruction, September 1971.

Blythe, N. and Sweet, C. (1979, April). The thrill of victory: A commercial TV format you can use. Audiovisual instruction, p. 22.

Borg, Walter R. and Gall, Meredith Damien. (1983). Educational research, 4th Edition, New York, Longman. pp 413-425.

Boucher, Brian G., Gottlieb, Merrill J. and Morganlander, Martin L. (1973). Handbook and catalog for instructional media selection. Englewood Cliffs, NJ, Educational Technology Publications.

Bowsher, Jack E. (1989). Education America: Lessons learned in the nation's corporations. New York, John Wiley.

Branson, R. K., Rayner, G. T., Cox, J. L., Furman, J. P., King, F. J., and Hannum, W. H. (1975). Interservice procedures for instructional systems development (5 vols.) TRADOC (Pam 350-30). Ft. Monroe, VA: U.S. Army Training and Doctrine Command, August 1975.

Bretz, R. (1971). The selection of appropriate communication media for instruction: A guide for designers of Air Force technical training programs. Santa Monica, CA: Rand.

Brey, Ronald and Grigsby, Charles (1984).Telecourse student survey 1984. Austin, TX: The Research Group.

Brey, Ronald (1988, October). Telecourse utilization survey: First annual report: 1986-87 academic year. Austin, TX. Annenberg/CPB Project and the Instructional Telecommunications Consortium .

Briggs, L. J., and Wager, W. W. (1981). Handbook of procedures for the design of instruction (2nd ed.) Englewood Cliffs, NJ: Educational Technology Publications.

Brinberg, David and Louise H. Kidder, (eds.) (1982, June). Forms of validity in research, San Francisco, Jossey-Bass.

Brown, Bernice and 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.

Brown, Bernice, Dalkey, Norman C. and Cochran, S. (1969, June). The Delphi method, II: Structure of experiments, RM-5957 PR, Santa Monica, CA: Rand .

Brown, James W., Norbert, Kenneth, and Srygley, Sara K. (1972). Administering educational media: Instructional technology and library services, 2nd ed. New York, McGraw-Hill.

Brown, James W. (1977). AV instruction, 5th ed. New York, McGraw-Hill.

Carnegie Commission, (1979). Public trust: The report of the Carnegie Commission on public broadcasting. New York, Bantam Books. pp. 255-256.

Carpenter, Ray. (1972). Form for evaluating the instructional effectiveness of films or television programs. In Quality in instructional television, Wilbur Schramm (Ed.) Honolulu, East-West Center Book, University Press of Hawaii, pp 205-210.

Carpenter, P. (1973, May). Cable television: A guide for education planners, R-1144 NSF, Santa Monica: Rand .

Center for Learning and Telecommunications, (1984). Telecourse Inventory, Washington, D.C.

Chu, G. C. and Schramm, Wilbur (1967). Learning from television: What the research says. Washington, D.C. National Association of Educational Broadcasters.

Clark, J. and Clark, Margaret (1983). A statistics primer for managers. New York, Free Press, pp. 26-28

Clark, F. E. and Angert, J. F. (1981). Teacher commitment to instructional design: The problem of media selection and use. Educational Technology, 1981, 21(5), 9-15.

Cohen, V. (1983, January). Criteria for the evaluation of microcomputer courseware. Educational Technology, 23(1), pp.9-14.

Corporation for Public Broadcasting (1980). Telecourses: Reflections '80 Executive Summary. Washington D.C. Corporation for Public Broadcasting. p. 5.

Crow, Mary Lynn (1977). Teaching on television. Arlington: The University of Texas, p. 8.

Curtis, Cally (1989, April). Dull is a four-letter word. Training Media Association Resource Supplement to Training, pp. 9-13.

Dalkey, Norman C. (1967a, June). The Delphi method: Study of group opinion, RM-5888-PR, Santa Monica: Rand.

Dalkey, Norman C. (1967b, October). Delphi, P-3704, Santa Monica: Rand .

Dalkey, Norman C. (1968a, March). Experiments in group prediction, P-3820 Santa Monica: Rand .

Dalkey, Norman C. (1968b, March). Quality of life, P-3805, Santa Monica: Rand.

Dalkey, Norman C. (1968c, October). Predicting the future, P-3948. Santa Monica: Rand.

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, and 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., and Rourke, Daniel L. (1971a, February). Experimental assessment of Delphi procedures with group value judgments, R-612-ARPA, Santa Monica, CA: Rand .

Dalkey, Norman C. and Brown, Bernice (1971b, May). Comparison of group judgment techniques with short-range predictions and almanac questions, R-678-ARPA, Santa Monica: Rand .

Daniel, John S., Stroud, Martha A. and Thompson, John R. (Eds.) (1982). Learning at a distance--a world perspective. Edmonton, Canada: Athabasca University/International Council for Correspondence Education.

DeNike, Lee and Stroether, Seldon (1976). Media prescription and utilization as determined by educational cognitive style. Line and Color publishers, Athens OH.

Diamond, Robert (1961, December). Single Room Television, Audiovisual Instruction, 6:526-27, p. 194.

Diamond, Robert M. (Ed.) (1964). A guide to instructional television, New York, McGraw-Hill.

Dirr, Peter J. (1986, May 24). Changing higher education through telecommunication, presentation for The World Congress on Education and Technology, pp. 1-2.

Dirr, Peter and Katz, Joan (1981). Higher education utilization study phase I: Final report.Washington, D.C.: Corporation for Public Broadcasting.

DiSilvestro, F. R. and Makowitz, H. J. (1982). Contracts and completion rates in correspondence study. Journal of educational research 75(4):218-21.

Doerken, M. (1983). Classroom combat: Teaching and television. Englewood Cliffs, NJ. Educational Technology.

Duchastel, P. (1983). Toward the ideal study guide: An exploration of the functions and components of study guides. British journal of educational technology. 14(3):216-37.

Eash, Maurice J. (1972, December). Evaluating Instructional Materials. Audiovisual instruction, p. 37. In Hitchens, Howard, (ed.) (1974). Selecting media for learning: Readings from "Audiovisual instruction," Washington, D.C. Association for Educational Communications and Technology.

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, D.C. Annenberg/CPB Project.

Erickson, C. (1968). Administering instructional media programs. New York, Macmillan.

Erickson, C. (1972). Fundamentals of teaching with audiovisual technology,2nd ed. New York, Macmillan.

Flinck, R. (1979). The research project on two-way communication in distance education; An overview. EHSC Workshop paper. Malmo: Liber-Hermods.

Eurich, Nell P. (1985). Corporate classrooms: The learning business. Lawrenceville, NJ, Carnegie Foundation for the Advancement of Teaching and Princeton University Press.

Finkel, A. (1982). Designing interesting courses. In Learning at a distance - A world perspective, eds. J. Daniel, M. Stround, and R. Thompson. Edmonton, Canada: Athabasca University.

Farnes, Nicholas (1975, May). Student-centred (sic.) learning. Teaching at a distance. Milton Keynes, Great Britain, The Open University/Technical Filmsetters Europe Limited. , No. 3, pp 1-6.

Flanigan, James (1989, March 24). Opportunity rings for Bell firms. St. Louis Post- Dispatch, Business Section, p. 1.

Forrer, Stephen E. (1986). The Annenberg/CPB project; An Interview with Robben Fleming, National forum: The Phi Kappa Phi journal, Summer ,Volume LXVI, No.3. pp 2-3.

Frankel, Martin M. and Gerald, Debra R. (1982). Projections of education statistics to 1990-91 Volume I--Analytical report. Washington, D.C.: National Center for Education Statistics.

Gagne, R. M. (1970). The Conditions of Learning (2nd ed.) New York: Holt, Rinehart, and Winston, p. 364.

Gagne, R. M. and Briggs, L. J. (1979). Principles of instructional design (2nd ed.) New York: Holt, Rinehart, and Winston.

Galagan, Patricia A. (1989, January). IBM gets its arms around education, Training and development journal, pp. 35-41.

Gallagher, M. (1977). Broadcasting and the Open University student. Milton Keynes, England: The Open University (mimeo).

Glatter, R. and Wedell, E. G. (1971). Study by correspondence. An enquiry into correspondence study for examinations for degrees and other advanced qualifications. London: Longman.

Gropper, G. (1976). A behavioral perspective on media selection. AV Communication Review, 24, 157-186.

Grossman, David M. (1987). Hidden perils: Instructional media and higher education. In Occasional Paper, National University Continuing Education Association. U.S.A.

Grossman, Lawrence K. (1982, April 30). Coming together -- Public television and higher education. Speech before the National Telecourse Conference 1982: "Managing Technology for Adult Learners." Dallas: pp. 1-13.

Gubser, Lyn, (1985, February/March). Is technology education's last hope? TechTrends.

Gueulette, David G., (1980). Television: The hidden curriculum of lifelong learning. Lifelong learning: The adult years, Vol. 3 (no. 5), pp. 4-7 and 35.

Gueulette, David G. (1988, January). A better way to use television in our classes. TechTrends. 33/1, pp 27-29.

Gueulette, David G. (ed.) (1986). Using technology in adult education. Washington, D.C., Scott, Foresman/AAACE Adult Educator Booklet.

Haney, John B. and Ullmer, Eldon J. (1975). Educational Communications and Technology. Dubuque, Iowa; William C. Brown Co. p. 29.

Harman, Alvin J. (1975, July). Collecting and analyzing expert group judgment data. P-5467, Santa Monica: Rand .

Havighorst, Robert J. (1960). Developmental Tasks and Education. New York; Longman, Green.

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.

Helmer, Olaf (1967a, March). Analysis of the future: The Delphi method, P-3558, Santa Monica, Rand.

Helmer, Olaf (1967b, November). Systematic use of expert opinions, P-3721, Santa Monica: Rand.

Henault, Dorothy, (1971). The media; Powerful catalyst for community change. Mass Media and Adult Education. John A. Niemi, Editor. Englewood Cliffs, New Jersey; Educational Technology . pp. 105-124.

Hezel, Richard T. (1987, November). Statewide planning for telecommunications in education; Executive summary: Washington, D.C., 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.

Holmberg, Borje, (1980). Aspects of distance education. Comparative education 16(2):107-19.

Holmberg, Borje (1981). Status and trends of distance education. New York: Nichols .

Holt, Smith (1989, April). Speech at Learning by Satellite IV Conference, Tulsa, OK. San Ramon, CA. Applied Business teleCommunications.

Honey, Peter and Mumford, A. (1982). Learning Styles Questionnaire, The manual of learning styles. Berkshire: Peter Honey.

Jones, Brynmor (1965). University Grants Committee, Department of Education and Science, Scottish Education Department: Audiovisual aids in higher scientific education. London: H.M.S.O., p. 8.

Johnston, Jerome, (1987). Electronic learning: From audiotape to videodisc. Englewood Cliffs, N.J.: Lawrence Erlbaum Associates.

Kalton, Graham (1983). Introduction to survey sampling, Beverly Hills, Sage , p. 69

Keegan, Desmond J. (1982). From New Delhi to Vancouver: Trends in distance education. In Learning at a distance--a world perspective, pp 40-43. J.Daniel, M. A. Stroud and J. R. Thompson (Eds.) Edmonton, Canada: Athabasca University/International Council for Correspondence Education.

Keegan, Desmond J. (1983). On defining distance education. In Distance education--international perspectives, pp. 6-33. David Sewert, Desmond Keegan and Borje Holmberg (Eds.) New York: St. Martin's Press.

Kemp, Jerrold E. (1975). Planning and producing audiovisual materials. New York, T. Y. Crowell, p. 47.

Kemp, J. E. (1971, December). Which Medium? Audiovisual Instruction, 32-6, p. 36.

Kemp, J. E. (1980). Planning and producing audiovisual materials (4th ed.) New York; Harper and Row.

Klitgaard, Robert E. (1973, March). Models of educational innovation and implications for research, P-4977, Santa Monica: Rand.

Knowles, Malcolm (1975). Self-directed learning: A guide for learners and teachers . New York, Cambridge

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.

Kumata, Hideya (1961, October 8-18). An inventory of instructional television research. Ann Arbor, MI: Educational Television and Radio Center. A report presented at the International Seminar on Instructional Television, at Purdue University, Lafayette, IN.

Ladd, Barbara (1989, April). Why self-study video training makes sense. Training Media Association supplement to Training, pp. 19-22.

Lesser, Gerald S., Lundgren, Rolf, and Carpenter, Ray. (1972). In Quality in instructional television, Wilbur Schramm (Ed.) Honolulu, East-West Center Book, University Press of Hawaii. pp . 213-217.

Levine, Toby Kleban, (1987). Teaching telecourses: Opportunities and options, a faculty handbook. Washington, D.C. Annenberg/CPB Project/PBS Adult Learning Service.

Lewis, Raymond J. (1983). Meeting learners' needs through telecommunications: A directory and guide to programs. Washington, D.C.: American Association for Higher Education.

Long, Thomas J., Convey, John J. and Chwalek, Adele R. (1986). Completing dissertations in the behavioral sciences and education, San Francisco, Jossey-Bass, pp. 94- 95.

Lundgren, Rolf (1972). What is a good instructional program. In Quality in instructional television, Wilbur Schramm (Ed.), East-West Center Book, University Press of Hawaii.

Makridakis, Spyros G., Wheelwright, Steven C., and McGee, Victor E. (1983). Forecasting: Methods and applications, 2nd ed. New York, John Wiley and Sons. pp. 652-655.

Martino, J. P. (1972). Technological forecasting for decision making, New York, American Elsevier, p. 27.

Matthews, E. W. (1972). Characteristics and academic preparation of directors of library- learning resource centers in selected community junior colleges. Carbondale, IL: Southern Illinois University. ERIC Document Reproduction Service No. ED 110 127.

Matsui, J. (1981). Adult learning needs, life interests and media use: Some implications for TVOntario. Toronto: TVOntario (mimeo).

Mayor, Mara and Dirr, Peter J. (1986). "Telelearning" in Higher Education. National forum: The Phi Kappa Phi journal, Summer 1986 Volume LXVI Number 3. pp 7-10.

McCutcheon, John W. and Swartz, James (1987, September). Planning for Cablecast Telecourses, T.H.E. journal, pp 98-102.

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

Menmuir, K., (1982). Educational technology by distance learning. Media in education and development 14(4):9-11.

Merrill, M. David, and Goodman, Irwin (1972). Selecting instructional strategies and media: A place to begin. Provo, UT, Division of Instructional Services, Brigham Young University.

Moore, Richard L. and Michael C. Shannon. (1982, February). Meeting needs for continuing education through advances in technology; Lifelong learning, vol. 5, no. 6, pp. 4-6, 35. 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. 17-21.

Munshi, Kiki Skagen (1980). Telecourses: Reflections '80. Washington, D.C.: Corporation for Public Broadcasting.

Myers, Sheldon (1972). A study of the educational technologies of computer-assisted instruction, instructional television, and classroom films, based on tour sites. EPIE Report No. 435.

National Committee for Citizens in Education, (1974). Fits and misfits; What you should know about your child's learning materials, Columbia, MD.

National Education Association (1976). Instructional materials; Selection for purchase. Rev. ed, Washington D.C. 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.

Nishimoto, M. (1969). The development of educational broadcasting in Japan. Tokyo: Charles E. Tuttle.

Nolan, Ernest I., (1984, April). Planning for telecommunication in the liberal arts college, T.H.E. journal, pp. 82-85.

Norman R. F., (1967, July). Assets and liabilities in group problem solving: The need for an integrative function. Psychological Review, Vol. 74, No. 4, pp 239-249.

Northcott, Paul and Holt, Dale (1986, February). Professional development programmes for accountants through distance education: An Australian study in programmed learning and educational technology, Journal of the Association of Educational and Training Technology, Vol 23, Number 1.

Oppenheim, A. N., (1966). Questionnaire design and attitude measurement. New York. Basic Books.

Pascarella, E. T., and Chapman, D. W., (1983). A multi-institutional, path analytic validation of Tinto's model of college withdrawal. American educational research journal: 20:87-102.

Parlett, M. and Woodley, A. (1983). Student drop-out. Teaching at a Distance, 24.

Patton, Michael Quinn (1980). Qualitative evaluation methods, Beverly Hills: Sage Publications. P.343.

Perrin, D. G. (1977). Synopsis of television in education. In J. Ackerman and L. Lipsitz (Eds.), Instructional television: Status and directions. Englewood Cliffs, NJ. Educational Technology. pp. 7-13.

Perry, Walter, (1977). The Open University, San Francisco: Jossey-Bass.

Pfeiffer, J., and Sabers, D., (1970). Attrition and achievement in correspondence study. National Home Study Council News, February supplement. Washington, D.C.: National Home Study Council.

Portway, Patrick, (1989, April 1). Speech at Learning by Satellite IV Conference, Tulsa, OK. San Ramon, CA. Applied Business teleCommunications.

Powell, J. T. (1983). A practical program to use media for staff development. Media and Methods, pp. 12.

Powell, J. T. (1982a, September). Faculty development through use of media: Part I. General planning precepts. Media and Methods, pp. 18.

Powell, J. T. (1982b). Faculty development through use of media: Part II. A general plan in five phases. Media and Methods, pp. 36-38.

Purdy, Leslie N. (1980). The history of television and radio in continuing education. New directions for continuing education: Providing continuing education by media and technology. No. 5. San Francisco: Jossey-Bass.

Quinn, Pamela K. and Adams, Sandy (1984). A guide to Dallas telecourses, Dallas, Dallas Community College District, p 4-7.

Reider. William L. (1985). VCRs silently take over the classroom, TechTrends, Nov/Dec. pp. 27-29.

Reiser, R. A. (1981). A learning-based model for media selection: Development (Research Product 81-25b). Alexandria, VA: Army Research Institute.

Reiser, Robert A. and Gagne, Robert M. (1983). Selecting Media for Instruction, Englewood Cliffs, NJ, Educational Technology Publications.

Rekkedal, T., (1982). The drop-out problem and what to do about it. In Learning at a distance---A world perspective, eds. J. S. Daniel, M. A. Stroud, and J. R. Thompson, Edmonton, Canada: Athabasca University.

Rescher, Nicholas, (1969, September). Delphi and values, P-4182. Santa Monica: Rand.

Riccobono, John A. (1986). Instructional technology in higher education; A national study of the educational uses of telecommunications technology in American colleges and universities; Executive summary; Washington, D.C. The Corporation for Public Broadcasting, The Annenberg/CPB Project and The Center for Statistics, U.S. Department of Education.

Romiszowski, A. J. (1974). The selection and use of instructional media. London: Kogan Page.

Sackman, H. (1974, April). Delphi assessment: Expert opinion, forecasting, and group process. R-1283-PR, Santa Monica: Rand.

Saettler, P. (1979). An assessment of the current status of educational technology. Syracuse, NY: Syracuse University. (ERIC document Reproduction Service No. 18-30).

Salomon, Gavriel (1983, September). Using television as a unique teaching resource for OU courses, England, Open University, IET Papers on Broadcasting No. 225.

Schoch, L. A. (1983). Author's guide to independent study. Bloomington, Indiana: Trustees of Indiana University.

Schramm, Wilbur, (1967, January). Instructional television promise and opportunity, Monograph Service, 4, pp. 1-20.

Schramm, Wilbur (ed.) (1972). What the research says. In Quality in instructional television. Honolulu: University Press of Hawaii.

Schramm, Wilbur (1977). Big media, little media, tools and technologies for instruction. Beverly Hills: Sage Publications.

Sewart, D. (1981). Distance teaching: a contradiction in terms? Teaching at a distance 19:8-18

Sewert, David (1982). Individualizing support services. In Learning at a distance--a world perspective, pp 27-9. J. Daniel, M.Stroud, and J.Thompson, (Eds.) Edmonton, Canada: Athabasca University/International Council for Correspondence Education.

Sive, Mary Robinson (1978). Selecting instructional media: A guide to audiovisual and other instructional media lists. Littleton, CO. Libraries Unlimited, Inc.

Sive, Mary Robinson. (1983). Selecting instructional media: A guide to audiovisual and other instructional media lists, 2nd edition. Littleton, CO. Libraries Unlimited, Inc.

Sleeman, P. J., Cobun, T. C., and Rockwell, D. M. (1979). In Instructional media and technology . New York: Longman.

Smith , M. H. (Ed.) (1961). Using television in the classroom. New York: McGraw-Hill.

Sonquist, John A., and Dunkelberg, William C. (1977). Survey and opinion research: Procedures for processing and analysis. Englewood Cliffs, Prentice-Hall. p. 7.

Stephens College, (1962). A Stephens Challenge, Information Brochure, Columbia, MO, Stephens College. p. 20.

Stephens, D. (1979). Motivating students in correspondence courses. Continuum 43(3): 27-38.

Stoffel, Judith A. (1987). Meeting the needs of distance students: Feedback, support, and promptness, Lifelong Learning: An omnibus of practice and research, Vol. 11, No. 3.

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.

Thompson, J. J. (1969). Instructional communication. New York, Van Nostrand.

Thompson, Loran T. (1973, June). A pilot application of Delphi techniques to the drug field: Some experimental findings, R-1124, Santa Monica: Rand.

Tosti, D. T. and Ball, J. R. (1969). A behavioral approach to instructional design and media selection. AV communication review, 17, 5-25.

Tough, Allen. (1979). The adult's learning projects. Toronto: Ontario Institute for Studies in Education.

Turner, Philip M., (1985). A school library media specialist's role, Littleton, Colorado, Libraries Unlimited.

U.S. Department of Education (1987, February). Office of Educational Research and Improvement. Center for Education Statistics. Enrollment in colleges and universities, Fall 1985. Bulletin: OERI, 5-6.

Unwin, D. (1969). Media and methods: Instructional technology in higher education. London, McGraw-Hill. pp. 136-142

Vehige, B. (1989, April). Speech at Learning by Satellite IV Conference, Tulsa, OK. San Ramon, CA. Applied Business teleCommunications.

Wagner, Ellen D. and Wishon, Phillip M. (1987). In International journal of instructional media, Vol. 14, No. 4.

Ward, Terry A. (1986, December). Statview converts raw data into useful information. MacUser, p. 91.

Weingartner, C. (1974). Schools and the future. In T. Hippie (Ed.) The future of education: 1975-2000. pp. 182-206. Pacific Palisades, CA: Goodyear.

Wong, A., and Wong, S. C. P. (1978-79). The relationship between assignment completion and the attrition and achievement in correspondence courses. Journal of educational research 72:165-68

Zigerell, James J. (1986). A guide to telecourses and their uses, Coast Community College District: Fountain Valley, CA., p. 35.

Appendix A

Examples of Evaluation Instruments

Worksheet for Planning Evaluation (Diamond, 1964, p 170)

Worksheet for Planning Evaluation			
Course	Instructor		
Evaluation	Date		
Televised Activity	Objective	Evaluation Technique	Time Administered

TV Evaluation Form (Diamond, 1964, p 267)

Lesson _____ Taught by _____ Date _____ Grade _____
Person Rating _____ Please rate each question on the following scale:
Lowest Highest

1. Objectives
   a. Were the objectives clearly stated? 1 2 3 4 5
   b. Were objectives feasible for the level of students being taught? 1 2 3 4 5
2. The lesson
   a. How adequately was the lesson planned to achieve the objectives? 1 2 3 4 5
   b. In your opinion, how effective was the lesson planned for the level of students in your class? 1 2 3 4 5

   Please rate the following aspects of the lesson:
   - Verbal presentation 1 2 3 4 5
   - Use of visual aids 1 2 3 4 5
   - Timing 1 2 3 4 5
   - Appropriate use of demonstrations 1 2 3 4 5
   - Effectiveness as a TV instructor. 1 2 3 4 5

3. Teacher activities from this lesson
   a. Were activities used to follow up the lesson? Yes ___ No ___ Not indicated ____
   b. If yes, which activities were provided? Yes ___ No ___ Not indicated ____
   - Making things: Yes ___ No ___ Not indicated ____
   - Practicing skills: Yes ___ No ___ Not indicated ____
   - Specific projects: Yes ___ No ___ Not indicated ____
   - Collateral Activities: Yes ___ No ___ Not indicated ____
   - Others: Yes ___ No ___ Not indicated ____

   Please list the specific activities below; be brief.
   1. _____
   2. _____
   3. _____
   4. _____
   5. _____

   Was any evaluation of the lesson attempted with the pupils? Yes ___ No ___ Not indicated ____
   What evaluation activities did you use?_____
4. Teacher Evaluation
   a. To what extent did this lesson achieve the stated objectives? 1 2 3 4 5
   b. What were the weaknesses of the lesson
   c. In this area of instruction adaptable to TV instruction? Yes _ No _ Not indicated _
   d. Should this lesson be required ___, Supplemental ____, Not used _____
   e. Are the topics covered in this lesson a part of the regular curriculum? Yes ___ No ___ Not indicated ____

South Carolina Educational Television Center (Diamond, 1964, p 270)

Teacher _____ Date _____ School _____
Number of students in classroom _____ Subject _____
Introduction: Good ___, Fair ___, Weak ___.
Summary: Effective _____ Ineffective _____
Content: Right amount _____ Too much _____ Too little _____
Sequence: Logical _____ Unrelated _____
Vocabulary: Good _____ Too difficult _____ Too easy _____
Visuals: Right amount _____ Too many _____ Too few _____
Pacing: Right _____ Too Fast _____ Too slow _____
Teaching Technique: Strong Points _____
Weak Points _____
Learning

Student Attention: Strong ___ Average ____ Poor ___
Student response to telecast: High ____ Average ____ Low _____
Learning retention from telecast: Large ___ Average ____ Small
Student reaction to telecast: Favorable ___ Average ____ Adverse
Technical Picture: Clear ____ Hazy ____ Comments (describe trouble): _____
Sound: Distinct ___Poor ____ Comments (describe trouble): _____

Dallas Center for Telecommunications, District Service Center, May 10, 1983
Evaluation of The Money Puzzle

A. General reactions to the Telelessons (Video Programs)
   1. List number/title of each of the telelessons you reviewed.
   2. What are you general reactions to the telelessons you reviewed?
   3. What do you consider to be the most positive aspects about these telelessons? Negative aspects?
   4. How do you think students will react to these telelessons?
B. Specific Reaction to the Telelessons (Video Programs)for each of the telelessons you reviewed respond to the following concerns, if appropriate for the given telelesson.
   1. The use of acting segments; actors/actresses.
   2. The presentation of significant facts/concepts/ideas.
   3. Believability of the characters portrayed and the realism of the settings.
   4. Will students be ale to identify "authority figures" readily?
   5. Logical sequencing of events and ideas.
   6. Visual difficulties.
   7. Audio difficulties.
   8. Will students be able to learn from these telelessons?
C. Reaction to the Textbook
   1. How well do you think students will learn from the textbook: Miller, Economics Today, 4th Edition?
   2. What specific concerns or comments do you have on the assignment in Miller listed in the Study Guide for the lessons you reviewed?
   3. How do you think students will react to the textbook assignments?
D. Reactions to the Telecourse Study Guide
   1. What are your general reactions to the study guide: Cruse, The Money Puzzle; The World of Macroeconomics?
   2. How do you think students will react to the study guide?
   3. How useful do you think the study guide will be in helping students meet the learning goals of the telecourse?
   4. What are you reactions to the following aspects of the study guide:
      a. The elements and their sequence; e.g., introductory sections (front matter), unit overview, film summary, vocabulary (key words), fill-in review, self test, special instructions, crossword puzzle, "above and beyond" (enrichment), self test answers.
   5. What reactions, comments, or concerns do you have regarding the study guide material for the specific lessons you reviewed?
E. Reactions to the Entire Telecourse: Based upon the materials you have reviewed and the print materials you have been given (textbook and study guide):
   1. Does the telecourse cover appropriate academic content/
   2. Does it include any academic content that is inappropriate to macroeconomics as taught in the DCCCD?
F. Conclusions
   1. Would you recommend that this telecourse be utilized by the DCCCD? Yes __ No __
      If yes, in which of the following way(s)? Why?
      a. Open broadcast (KERA-TV) and cable-TV.
      b. Cable-TV only.
      c. Cable-TV and closed circuit on campus.
      d. Closed circuit on campus; either in part or in total, in the classroom and/or in learning centers.
   2. If you see a use or uses by the DCCCD for some or all of the material of this telecourse, what modifications and/or supplementations would you recommend? Why?
   3. Would you use the telecourse in total or in part? If so, in what way or ways? Yes _____ no ____
   4. Other comments/recommendations.

McCutcheon and Swartz (1987, p. 99)

1. Which course(s) exist(s) in curriculum that will be suited for delivery via cablecast? Many courses are not and require laboratory work or as is the case of writing courses, a great deal of instructor feedback. Here the adopter should question the effectiveness of using this as a telecourse or if the telecourse will attract sufficient enrollment.
2. Are the materials designed for a semester or a quarter?
3. Are the materials available for preview?
4. Do the materials have a varied and interesting format which takes full advantage of television's visual potential?
5. Do the materials include support information such as transparencies, handouts, or test banks?

6. Do test and other written materials interface well with video materials?
7. What is the production date, and is the content accurate and current?
8. What is the cost to purchase, license, and use the material?
9. Will the producer permit making multiple copies of video materials; if not, what is the charge for a duplicate set or for the duplication rights?
10. What do other adopters say with regard to the effectiveness of the telecourse and associated materials? (a local consortium may have some information or the publisher/distributor should be able to supply a list of adopters.
11. Have the materials been field-tested?
12. Decision makers should determine how appropriate the materials are in light of their intended use and in light of the experiences of others adopters of the telecourse.
13. Market research to determine how many members of the community will participate in telecourse activities? Ask respondents to select those that they would take. The time of day/week they prefer, time/dates convenient for limited campus visits.
14. Other steps to be taken to bring about positive student experiences from telecourses? On site registration and payment of fees, distribution of course materials, grading procedures, assignment sheets, discussion of what students will gain from completing course assignments, whom to call for help, where tapes may be viewed if missed on cable, names of class members, encourage formation of study groups.

Cohen (1983)

1. Objectives and Pretesting
2. Content
3. Questions
4. Posttest
5. Technical
6. Workbook
7. Instructional Supervisor
8. General

The Rand Corporation Carpenter (1973)

Transmission type: Broadcast: Cable: Closed-Circuit: ITFS (Instructional Television Fixed System)
Maximum channel capacity and channels for education, access to additional channels
Connections for school buildings to regular cable service and installation, monthly charges.
Two-way capability
Nominal radius of coverage
Cost to subscribe to cable for home viewer
Potential audience - identify and define
Daytime or Evening
Ages and grade levels
Ethnicity
Numbers of students in each major category
Privacy
FCC regulations
Liaison with broadcast facility
Arrange for feedback from audience
Gender
Economic level
Language capabilities (reading level, vocabulary, bilingual ability)

Key Resources
TV programming - acquire
Production of new materials
Publicizing activities
Estimate resource requirements
Define structure and set up organization
Obtain and train staff
Concurrent instruction or counseling
Feedback from Audience
Liaison with other groups (consortia, etc.)
Identify funding and amount required

Costs
Lowest cost over a given period - ten years
Lowest capital cost
Lowest recurring cost
Maximum utilization of television in instruction
Lowest cost of instruction per student in project subjects over a given period
Maximum utilization of available personnel
Maximum utilization of advanced technology
Maximum likelihood of additional funding.

Planning
Specify project objectives
Goals
to make education physically more accessible to students
to provide additional services that cannot readily be provided by other means
to improve the quality of education

to decrease the unit cost of education
Design project
Estimate resource requirements
Define the organization to conduct the project
Will the project compete with other established agencies such as libraries? Can such conflicts be ameliorated or resolved.

Turner (1985)

Evaluating the Needs Assessment

1. Were various sources of content considered?
2. Was a rational for selecting the content established?
3. Were instructional goals clearly stated?
4. Were the learners' previous accomplishments correctly identified?
5. Was the content prioritized for instruction? Did this prioritization bear up in practice?
6. What are the implications for this step the next time this lesson is planned?

Evaluating the Performance Objectives

1. Were the performance objectives derived from instructional goals?
2. Did the objectives clearly state an observable learner behavior?
3. Could it be ascertained who was to perform the behavior?
4. Were the objectives identified according to a taxonomy?
5. Were enabling objectives established for each terminal objective? Were these adequate?
6. Were entrance skills delineated? Did the students possess them?
7. Was a teaching sequence of objectives established? Was it appropriate?
8. What are the implications for this step the next time the lesson is used?

Evaluating the Learner Analysis

1. Was a learner analysis attempted?
2. Was the method of conducting the learner analysis appropriate for the students? Was the method selected in order to achieve specified goals? Was the method chosen because of the availability or ease of use of instruments?
3. If the method chosen involved student participation, did this procedure appear valid and reliable?
4. Were learners analyzed individually or by groups?
5. Did the methods used yield information to assist in the design of materials and activities?
6. What are the implications for this step the next time this lesson is used?

Evaluating the Tests

1. Were tests based upon the performance objectives?
2. Was the use of pretests, self-tests, and embedded tests considered?
3. Were all performance objectives tested?
4. Was the appropriate number of items for each terminal performance objective used?
5. Was the type of test used appropriate for the performance objectives?
6. Were test items well written?
7. Were attempts made to ascertain validity and reliability?
8. What are the implications for this step the next time this lesson is used?

Evaluating the Instructional Materials

1. Were materials selected on the basis of the performance objectives?
2. How was the medium selected?
3. Was a range of titles sought?
4. Were reviews consulted?
5. Were materials previewed?
6. Were learner characteristics considered in the selection of the materials?
7. Were the materials tested with small groups of students?
8. During use, did the materials seem to be appropriate for the learner characteristics? Did the students respond to the materials? Were they involved?
9. What are the implications of this step the next time the lesson is used?

Evaluating the Student Activities

1. Were the activities selected on the basis of the performance objective?
2. Were the activities selected on the basis of learner characteristics?
3. Did the learners spend the majority of the time on task?
4. Under what conditions did each learner spend time on task?
5. What type of interaction did the learner have with peers and teacher
6. What are the implications for this step the next time this lesson is used?

Evaluating the Implementation

1. During instructor-presented instruction, did the teacher compensate for students' learning deficiencies?
2. When using instructional packages, did the teacher compensate for students' learning deficiencies?
3. Did the teacher prepare and use adequate teaching plan?

4. Were the results of tests maintained systematically?
5. Was the classroom environment designed to match learner characteristics?
6. Was sufficient order maintained to enable learning to take place?
7. What are the implications for this step the next time this lesson is used?

Evaluating the Evaluation

1. Was an evaluation of any kind attempted?
2. Were a wide range of information sources considered?
3. Were all steps in the process considered?
4. Were the steps which contained problems emphasized?
5. Were recommendations for solutions to the problem formulate?
6. Were personalties left out of the evaluation process as much as possible?
7. What are the implications of this step the next time this lesson is used?

Film/Video Evaluation (ASTD 1987)

1. Program Title _____
2. Length _____
3. Cost _____
4. Manufacturer _____
5. Learning objectives served (fill in the learning objectives of the training session, and check the boxes next to the objectives the program serves
   _____
   _____
6. Is the program style and approach appropriate for the age group, cultures, experiences, and education level of learners? Age group ____ Cultures ____ Experience _____ Education Level ____
7. Characteristics of program (Check the characteristics that fit the program)
   - Short program (single concept or few functions covered.
   - Well-organized content (sequence of information correct)
   - Well-paced content (presentation of information dynamic, yet slow enough for comprehension
   - Appropriate terminology (consistent with rest of training)
   - Good narration (active voice, relevant to visuals)
   - Good visuals (shot from viewers' point of view)
   - Realistic situations and characters
   - Portrayal of positive role models
   - Portrayal of racial, sexual, and political equality
   - Simple story plot
   - Comprehensive, accurate information
   - No excess information
   - Summarized and repeated information where necessary
8. Comments: What could this program accomplish in training that could not be done more simply or inexpensively with another film, video, or training method?
   _____
9. Physical condition of program: Excellent Satisfactory Poor
10. What is your overall evaluation of this program for your current training purpose?
    Excellent Satisfactory Poor

Levine (1987, p. 56)

Overall evaluation:

1. Is the course compatible with the institution's mission?
2. Is a comparable course in the institution's catalog? How does the television course compare to it in terms of objectives, content, approach, academic level, and students it might serve?
3. If there is no comparable course, would this subject make a good addition to curricular offerings or would it fit a special topics category?
4. Does the course have an innovative approach to the teaching of the subject or provide a new resource?
5. Is there interest in the topic of the course among faculty in the department?
6. Is there likely to be sufficient interest in the subject from prospective students to warrant offering the course?
7. Is the overall instructional design for the course academically sound? Are the academic goals of the course well-defined? Realistic? Comparable to traditional courses on the subject?
8. What are the components of the course? Are they adequate to achieve the goals of the course and meet your college's requirements? Are they well coordinated?
9. Is there sufficient flexibility in the course design to permit adapting the course to local needs and faculty interests?

Print Components

1. Are the print materials academically valid and up-to-date? Are they attractive and readable? Will they engage students' interest?
2. Does the study guide tie together the text, video, and other course components? Does it clearly

identify lesson objectives, reading assignment, and what to look for in the television programs? Does it provide a means for students to assess their own learning.

3. Does the study guide elaborate on complex or controversial points presented in the programs or readings? Are the study assignment pertinent o the material and challenging to the student?

Video Components

1. Does the video make effective use of the television medium to present information and maintain interest? Are key points or concepts demonstrated on explained adequately? Is there a logical flow to the programs?
2. Is the pacing of the television programs adequate to attract and maintain student interest but slow enough to allow students to grasp the content/
3. Is there a sufficient amount of academic content in the television component to fulfill its role in the course design?
4. Is the host or narrator understandable? Appealing/ Credible?
5. Do the programs encourage further study of the subject?

Form for Evaluating the Instructional Effectiveness of Films or Television Programs , Carpenter (1972)

Name/number of program _____ Title of Series _____Produced by _____ Distributed by _____ Date _____

This form has been designed to study the factors and elements in a unit of instructional material which contribute most significantly to its achievement of excellent quality . For the purposes of this evaluation, quality is defined as those factors which produce the desired behavioral changes in the target population.Please circle the term which represents your best judgment of the degree to which the program satisfies each criterion. feel free to add any comments which will help to describe the reasons for evaluation. If you believe the criterion does not apply, please encircle DNA.

I. Objectives

1. Are the instructional objectives as stated or implied in the lesson clear to the viewer?
   Very clear Clear Adequate Unclear Very unclear DNA
   What are the objectives _____
   How are they stated? By whom? _____
2. Does the content of the program relate closely to the main objectives , or are there many irrelevancies?
   Very closely Closely Adequately Some irrelevancies Many irrelevancies DNA

II. Content

3. Does the amount of time taken to develop each concept, procedure, or example seem appropriate or inappropriate for the intended audience?
   Highly appropriate Appropriate Acceptable Somewhat inappropriate Highly inappropriate DNA
4. Is the content organized and so structured as to facilitate learning?
   Very well Well Adequately Poor Very poorly DNA
5. Is the material based on expert, up-to-date professional information?
   Contains latest knowledge Very up-to-date Adequately up-to-date Contains obsolete information
   Very obsolete DNA
6. Is the vocabulary level appropriate for the intended audience?
   Highly appropriate Very Appropriate Appropriate level Inappropriate Very inappropriate DNA

III. Presentation of Material

7. Does the presentation provide for optimum repetition of the main ideas? (e.g., Summaries of main points from time to time and at end; repetition with variation.)
   Optimum repetition Adequate repetition Some repetition
   Too little or too much Far too little or far too much DNA
8. Does the program effectively use appropriate pictures, film clips, demonstrations, diagrams, and other graphics? (Number and kinds of visuals are not as important as the way in which they are used to support the instruction.)
   Highly effective Above average Moderately effective Below average Ineffective DNA
9. Is the video-photographic presentation clearly perceivable by use of good lighting, appropriate camera shots, sharpness of details, pointers,suitable backgrounds, etc? (This does not require a highly technical or engineering evaluation but rather a judgment as to whether or not the program or film is perceptually clear.)
   Highly perceivable Clearly perceivable Acceptable Barely perceivable Unperceivable DNA
10. Is the audio intelligible? Satisfactory Unsatisfactory DNA
11. Is there an appropriate integration of visual and audio?
    Excellent integration Good integration Adequate Poor integration Very poor integration DNA
12. Does the presentation give the impression of authenticity?
    Authentic Lacks authenticity DNA
13. Do the personality and appearance of the teacher or teacher add to or detract from

the effectiveness of the presentation?
Adds greatly Adds somewhat Neutral in effects Detracts somewhat Detracts greatly DNA

14. Do the characteristics and quality of the instructor's or commentator's voice add to or detract from the effectiveness of the presentation?
Adds greatly Adds somewhat Neutral in effects Detracts somewhat Detracts greatly DNA

15. Does the teacher appear on camera for an appropriate amount of time?
Optimum amount of time Too much Too little Approximate percentage of time DNA

IV. Learner Stimulation

16. Are the techniques designed to provide viewer participation successful or unsuccessful? (Participation means students using work sheets, devices, and other ways of actively involving them in the instruction.
Highly successful Moderately successful Barely successful
Partially unsuccessful Totally unsuccessful DNA

17. Does the presentation motivate the student to do supplementary work and study on the problem? (If so, specify under comments what the learners might do.)
Very high motivation High Adequate Low Very low motivation DNA

18. Is any testing incorporated into the presentation or presented by the classroom instructor to the students following the telecast to measure the learners' achievement? (Note under Comments how testing is included.)
Appropriate testing procedure Too much testing Too little testing No testing DNA

19. Is there a procedure for reporting the knowledge of test results? (Under Comments, specify what type and to whom reported.)
YesNo DNA

VI. General Evaluation

20. What is your overall evaluation of the unit?
Outstanding Above average AverageBelow average Very poor DNA

21. What other criteria are applicable to this unit? Use these criteria for further evaluation of the unit. If information is available, note here facts on utilization, i.e, number of schools presently using the lesson or series, how often, etc .

Appendix B

112 Respondents to Both Rounds

Org	St	Sal	First Name	Last Name	Title
Aires Productions	MO		Charles	Gregson	Prod.
			Molly	Johnson	Prod. Ass't.
			Barbara	Coughlin	Producer
Amarillo Col.	TX	Dr.	Neil	Sapper	Telecourse Coor.
Am. Assoc. Comm. & Jr. Colleges	D.C.		Phillip	English	VP
Aren/Executive Comm.	PA		Larry	Whitney	Sales Rep.
AZ State U	AZ		Elizabeth	Craft	Head of Inst'l. TV
Austin Comm. Col.	TX		Ronald G.	Brey	Dir., Non-Traditional Inst.
Ball State U	IN	Dr.	Ray L.	Steele	Ctr. for Info. & Comm. Sci.
Barstow Col.	CA		Joseph	Clark, Jr.	Ass't. Dean, Inst'l. Ser.
Belleville Area Col.	IL		Lloyd	Gentry	Dir. of Lrn.Res, Telecrse. Office
Bowling Green State U	OH		Patrick	Fitzgerald	Dir. of TV Lrn. Ser., WBGU-TV
Butler County Comm. Col.	KS		Joe	Hostetler	Dir., Media Res. Ctr. Cable 14
CA State U, Fresno	CA	Dr.	Patricia	Hart	Pgm. Development Specialist
CA State U, Los Angeles	CA		Rod	Jensen	Dir., ITFS Ext. Ctr., Cont. Ed.
Cameron U	OK		Kathleen B.	Glenn	Ass't. to Dean, Ed Outrch/Spc. Pgms.
Central Piedmont Comm. Col.	NC		Dennis	Cudd	Dir. Inst'l. Telecom.
Clark County Comm. Col.	NV	Dr.	Michael	Henderson	Ass't. to Dean for Ext.
Colorado State U	CO		Richard	Thomas	Coor., Dis. Learning, Cont. Ed.
Dallas Comm. Col. District	TX		Theodore W.	Pohrte	Dir., Inst'l. Ser., Ctr. for Telecom.
De Anza Col.	CA		Beth	Grobman	Coor., Ind. Study Pgm.
Durham Technical Comm. Col.	NC		Helen D.	Thompson	Coor., Cur/Telecourse Ctr., Ed Res.
Dutchess Comm. Col.	NY	Dr.	Gary C.	Pfeifer	Assoc. Dean of Aca. Affairs
Elgin Comm. Col.	IL		Donna L.	Post	Telecourse Coor.
Essex Comm. Col.	MD		Rosalie	Russell	Coor. of Aca. Programs
Fort Scott Comm. Col.	KS	Dr.	Steven	Hoyle	Dir. of Cont. Ed.
Galveston Col.	TX		Sid	Young	Coor. of Telecourses
Glendale Comm. Col.	CA	Dr.	Jo Roy	McLuers	Dean, Evening College
Glenville State Col.	WV		Rolanda	Coberly	Ext. /ITV Dir.
GPN	NE		Larry	Aerni	Dir. of Mkt.
Inst'l. Comm. Ctr.	IL		Sally	Petrilli	Coor. of Inst'l. Development
Int'l. Telecom. Ser., Inc.	VA		William M.	Barnhart	President
Int'l. Univ, Consortium	MD	Dr.	Gary	Miller	Exec.Dir.
Iowa Lakes Comm. Col.	IA		Gary L.	Feddern	Dir. TV Ctr.
Kaskaskia College	IL		Ruth	Barczewski	Asso. Dean, Learning Resources Ctr
KY Network	KY		William H.	Wilson	VP Mkt. & Sales
Lakeland Comm. Col.	OH		M.	Johnson	Prof., Social Science
Lane & Johnson	MO		George	Johnson	Producer
Learning Ser., % U of Utah	UT		Douglas	Jones	Dir. State Ed Telecom. Op. Ctr.
Miles Comm. Col.	MT		Sydney	Sonneborn	Coor., Telecom Dev. Office
MS Gulf Cst Jr Col. Jackson Ct .	MS	Dr.	Elizabeth P.	Nelms	Ass't. Dean, Learning Resource Ctr.
MO School Boards Assoc	MO		Nancy	Thomas	Prod/Dir. ESN
MO Western State Col.	MO	Dr.	Ed	Gorsky	Dir. of Cont. Ed.
Moraine Valley Comm. Col.	IL		Rod	Seaney	Dir., Ctr. for Alternative Learning
Nat'l Emergency Training Ctr.	MD		Susan	Downin	Exec.Prod, FEMA
NUTN	OK	Dr.	Marie	Oberle	Director
NC State U	NC	Dr.	Robert K.	White	Int. Dir., Inst'l. Telecom.
Northcentral Technical Col.	WI		Barbara	Cummings	Alt. Del. Sys. Mgr, Inst'l. Ser.
Northern KY U	KY		Robin	Wright	Adm. Dept.
Northern VA Comm. Col.	VA	Dr.	Steven G.	Sachs	Assoc. Dean, Inst. Tech & Ext. Lrn.
Northwest Reg. Ed.Lab.	OR		Donald	Holznagel	Dir., Tech.Pgm.
Oakland Comm. Col.	MI	Dr.	David	Doidge	Telecourse Coor.
Oakton Comm. Col.	IL		Sandra	Wilen	Mgr., Alt. Ed.
OK Christian Col.	OK		Gary J.	Hurst	Media Ctr. Dir.
OK State Regents Higher Ed.	OK	Dr.	Robert F.	Parker	Coor., Off-Campus Ed., Ed Outreach
Old Dominion U	VA	Dr.	Anne R.	Savage	Ass't. VP, Aca. Affairs
Open U, AV Media Res. Group	GB	Dr.	A. W.	Bates	Institute of Ed.Tech.
Our Lady of Holy Cross Col.	LA	Dean	Gerald F.	DeLuca	Aca. Dean
Oxnard Col.	CA	Dr.	Judith	Gerhart	Dean of Cont. Ed.

Appendix B (continued)

Org	St	Sal	First Name	Last Name	Title
Pacific Mt. Network	CO		Dan	Flenniken	Projects Coor., Learning Ser.
Paducah Comm. Col.	KY		Paula	Payne	Coor., Cont Ed.
Parkland Col.	IL		Al	Lansdowne	Dir., Ctr. for Media & Tech. Ser.
Pasadena City Col.	CA	Dean	Rod	Foster	Dean, Lrn. Resources
Peru State Col.	NE	Dean	Robert	Baker	Cont. Ed.
Phelps County Reg. Med. Ctr.	MO		Nancy	Howard	Dir. of Ed. & Training
Prairie State Col.	IL		Pam	Gaitskill	Dir. of Lrn. Ctr.
Purdue U	IN		Shirley M.	Davis	Dir., Media-Based Pgms., Cont. Ed.
Purdue U North Central	IN		L. Edward	Bednar	Ass't. to Vice-Chan for Aca. Ser.
Raritan Valley Comm. Col.	NJ	Dr.	Charles F.	Speierl	Ass't. Dean, Comm. Ed.
Rend Lake College	IL		David	Patton	Dir., Learning Resource & Media Services
SCTV Network	SC	Dr.	Ruth	Marshall	Dir. for Higher Ed., Cont. Ed.
Southern AR U Tech	AR	Dean	Judy	Harrison	Jr. Col. Div.
Southern CA Consortium	CA	Dr.	Hailton M.	Maddaford	VP Member Ser.
Southwestern Bell	KS		Gayle D.	Gordon	Mgr. - Video Ser., Mkt.
St. Petersburg Comm. Col.	FL	Dr.	Grant C.	Hoatson	Dir., Inst'l. TV Ser.
Swank Audio Visuals, Inc.	MO		Steve	Edmondson	GM
Tyler Jr. Col.	TX	Dr.	Mickey	Slimp	Dean, Lrn. Res
Union County Col.	NJ		Neva N.	Sachar	Telecourse/Teleconf.Coor
U of IL, Div. of Ext. Courses	IL		Fred	Mastny	Pgm. Dir. for Media Based Ed.
U of AZ- Videocampus	AZ		Eileen	Matz	Exec.Prod., Videocampus
U of CA, San Diego	CA		Yvonne	Hancher	Dir., Mkt. Ext.
U of Cincinnati	OH		Geralyn H.	Sparough	Pgm. Coor., Cont. Ed.
U of CO	CO	Dr.	Daniel	Niemeyer	Dir., Aca. Media Ser.
U of FL, Div. of Cont. Ed.	FL		James	Andrews	Ass't. Dir., Ind. Study
U of IL	IL	Dr.	Linda	Krute	Pgm. Dir., Extramural Courses
U of KY	KY	Dr.	Nofflet	Williams	Assoc. Dean, Dis. Lrn., U Ext.
U of MD, U Col.	MD	Dr.	Sally M.	Johnstone	Dir., Inst'l. Telecom.
U of MI	MI		George W.	Williams	Dir. Media Ser.,Res Lrn/Teaching Ctr.
U of MN	MN	Dr.	Ann	Friedman	Coor. Media-Ass't Inst. Dept of Ind. Stu.
U of MS	MS		William	Cole	Ed.al Coor., Dis. Learning
U of MO - Columbia	MO		David	Dunkin	Dir., Aca. Support Ctr.
U of MO - Columbia Ext.	MO		Joanne S.	Heisler	Ass't. Prof., Coor.
U of MO - St. Louis	MO	Dr.	Peggy	Filer	Ass't. Prof. Beh. Studies
	MO	Dr.	Steven	Hause	Prof. of History
	MO	Dr.	Huber M.	Walsh	Prof. Ele. Ed.
U of MT	MT		Michal	Malouf	Pgm. Mgr., Ctr. for Cont. Ed.
U of NB-Lincoln	NE	Dr.	Marvin	Van Kekerix	Dir., Aca. Telecom.
U of New Brunswick	NB		Marilyn	Noble	Dis. Ed. Coor., Ext.
U of NM	NM	Dr.	Walter D.	Yoder	Assoc. Dir., Inst'l. Telecom.
U of New Orleans, Metro. Col.	LA	Dr.	Carl E.	Drichta	Assist. Dean & Dir.
U of OK	OK		Jerry L.	Hargis	Ass't. Vice Provost Cont. Ed. Ser.
U of Phoenix	CA		Gary	Sello	Telecom. Mgr.
U of South FL	FL	Dr.	Thomas C.	Wilson	Dir., Open U
U of TN, Memphis	TN	Dr.	Raoul	Arreola	Ass't Dean, Asses/Pl, Grad. Col. Health Se
U of WA	WA		Leon W.	Hevly	Dir., Inst'l. Media Ser.
U of WI-Ext.	WI		Luke F.	Lamb	Dir. Telecom. Div.
Ventura Col.	CA	Dr.	Lyn	MacConnaire	VP, Inst.
VA Poly Technic Inst. & State U	VA	Dr.	Stanley A.	Huffman, Jr.	Dir., Dis. Lrn., Office of Dis. Lrn.
Washington State U	WA		Ellen	Krieger	Ind. Study Coor. Ext. U Services
Washtenaw Comm. Col.	MI		Gary	Dodge	Suprv., Cont. Ed.
Wichita State U	KS		Norma C.	Gribble	Dir. of Aca. Outreach, Cont. Ed.
Wilkes Comm. Col.	NC		Nithi	Klinkosum	Dir., Telecom.
William Harper Rainey Col.	IL		Molly	Waite	Telepgm. Coor., Business & Soc. Sci. Div
WSRE-TV Pensacola Jr. Col.	FL		Mike	Chamberlain	Prod. Mgr.

Appendix C

Transmittal Letters

University of Missouri-St.Louis
Video Instructional Program
355 Marillac Hall, 8001 Natural Bridge Road
St. Louis, MO 63121-4499
314-553-6196: 314-533-0010
FAX 314-553-5266

April 28, 1989

,

Dear :

The University of Missouri - St. Louis is conducting research with distance education experts to develop an instrument to evaluate telecourses during the adoption process. Specifically, we are interested in multi-component telecourses offered for credit at post-secondary institutions.

This study will produce an evaluation instrument which should be useful to train inexperienced personnel and guide experienced personnel. We particularly want your response because of your experience with distance education.

We hope to reach a consensus of expert opinion through two versions of the questionnaire. Your answers to the first questionnaire will be analyzed and a revised questionnaire will be sent to you before May 24. After you react to the feedback and return the form, data will be analyzed and a copy of the final instrument will be sent to you for your use. The research results will be presented in October at TeleCon IX, San Jose, CA.

This study is being conducted because there is no empirically based evaluation tool for telecourses. Most adoption personnel who are are not media experts find it difficult to evaluate a multi-component telecourse package. The questions are drawn from a literature review, but based upon your experience, there may be items which should be added or expanded. It takes about 10 minutes to complete the questionnaire. Please fill it in and return it by May 10.

Thank you for your time,

Carla Lane
Continuing Education Specialist
Video Instruction

University of Missouri-St.Louis
Video Instructional Program
355 Marillac Hall, 8001 Natural Bridge Road
St. Louis, MO 63121-4499
314-553-6196: 314-533-0010
FAX 314-553-5266

May 15, 1989

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Dear :

Thank you for the time you spent answering the first round questionnaire to develop an evaluation form for distance education telecourses. Your interest in this project is appreciated and it is apparent that we have the expertise to create a telecourse evaluation instrument which will be used by many institutions.

Purpose: Develop a telecourse evaluation instrument which can be used by all selection personnel when a telecourse is under consideration for adoption by an institution. Specifically, we are interested in multi-component telecourses offered for credit at post-secondary institutions. There is no empirically based evaluation tool for telecourses. Most adoption personnel who are not media experts find it difficult to evaluate a multi-component telecourse package.

This study will produce a pre-adoption evaluation instrument which should be useful to train inexperienced personnel, guide experienced personnel, and set criteria which all personnel may consider in making recommendations to adopt or reject the telecourse.

We hope to reach a consensus of expert opinion through two rounds of the survey. The first round statements were drawn from a literature review.

Second Round Survey: The second round statements are based upon feedback from you and other distance education professionals. It contains 72 statements. Median scores for the group's collective knowledge and importance the group collectively attached to a statement appear in the survey's feedback column. A limited number of comments from the first round also appear in the feedback column.

Ranking Instructions: Rank your knowledge about the question and then score the importance of the statement to the evaluation process. Please rank all scales; if the topic is outside of your expertise, mark a lower rank on the knowledge scale. If the topic does not now concern your institution, but you feel the statement is important to a proper evaluation, rank the importance at four on the scale.

Feedback Instructions: Use the feedback column to critique, edit, or make comments about the statements. Use the back page if necessary; please identify remarks by the statement's number. If we have left out a point which you consider to be important, please make the statement again. Please feel free to critique material that you feel is based on erroneous assumptions. State why you feel the statement is unconvincing. We encourage you to continue to cite authorities so that we may all learn from the process.

Final Instrument: After the response to the second round survey is analyzed, the final instrument will be prepared. You will receive a copy of the final instrument if you return the second round survey.

Deadline: May 24. Please return the survey by mail, computer, or call - just get it to us.

Thank you for your time and your help.

Carla Lane
Continuing Education Specialist

University of Missouri-St.Louis
Video Instructional Program
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July 30, 1989

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Dear :

Results of the Questionnaire on Distance Education Evaluation

Enclosed is a copy of the final evaluation form for use with distance education telecourses.

Over 112 participated in the study and the evaluation reflects the extensive input from distance education professionals throughout the United States, Canada, and Great Britain.

We hope that the evaluation instrument will become an important tool for your distance education program.

Thank you for your participation in this study. We look forward to hearing from you about the results of using the evaluation instrument.

Sincerely,

Carla Lane
Continuing Education Specialist
Video Instruction

Appendix D

First and Second Round Questionnaires and

Final Instrument