Planned Change and the Adoption of Distance Learning
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Planning for Educational Technology and Distance Learning

Planning to use educational technologies and distance learning programs involves developing how technology can improve the quality of education and create an environment where all students have the opportunity to learn. The National Information Infrastructure is evolving, as is educational reform. It is imperative that the two evolve together or there is the danger that the educational reforms (national standards, curriculum frameworks, authentic assessment, teacher pre and in-service programs) will be irrelevant to the circumstances of working in a networked, information intense and communications based global society. Educational reforms are driven by the changes in the society which include information systems and communications. Currently, education lags behind business and industry in the adoption of technologies, yet the pace of knowledge creation is increasing. Much has already been made of education's reliance on the industrial model while the world has moved into the Information Age, and is very likely in the early stages of the Communications Age.

Successful adoption of educational technologies and distance learning focus on three primary concepts; that the benefits of the use of technology and distance learning will not be apparent in an educational organization until all students and teachers have equitable access to the technology and educational programming provided through voice, data and video; that students learn by constructing their own knowledge and sharing that process with others in their classroom and across networks by instructors who have become effective facilitators of learning; and that the combination of equitable and universal access, student construction of knowledge, and facilitative teaching will result in the transformation of learning and teaching. Technology can transform teaching and learning. "To accomplish that job," says Dr. Linda Roberts, director of the Office of Educational Technology, U.S. Department of Education, "technology must be an integral part of your school or community's overall plan to move all children toward high academic standards (1994). Key elements are planning, adequate budgets, equipment that is widely available to all students and teachers in the classroom, professional development, technical and administrative support, and well produced programming that seamlessly integrates technology into the flow of learning and teaching. Roberts suggests the following examples:

- Voicemail systems allow parents to check on a child's daily homework assignments and school schedule.
- Interactive satellite links give students a chance to take courses by television, allowing them to learn subjects such as languages or advanced calculus even if there is no teacher available in their own schools.
- Electronic bulletin boards offer an opportunity for teachers to share lessons and instructional tips with other teachers in the community or around the country.
- On-line computer networks offer an opportunity for kids in different parts of the
- country to work collaboratively on challenging, real-world problems in subjects such as ecology and geometry.
- Software and equipment offer an opportunity for students to research and then create multi-media presentations using sound, text, and full-motion video.
- Low-cost modifications to classroom computers make it possible for children with disabilities to communicate and participate fully with other students.

Planning for distance learning should involve teachers, staff, and administrators, as well as students, parents, the community and business. Roberts (1994) notes that there are a number of people studying the use of technology in education and they should be used as a resource in planning. As you begin the planning process, by using outside resources such as literature, other education agencies, and people, you will find that the planning process will be less difficult. Utilizing professionals in needs assessment, planning, educational technologies, curriculum and instructional design, and professional development will be cost effective.

There are any number of ways to approach the planning process. Roberts (1994) suggests some deceptively simple questions as beginning step.

- How will the technology be used?
- How will the introduction of technology effect the way the school works?
- How will technology affect the role of teachers?
- How can the community be involved in the introduction of technology in the school?
- How much will the changes cost?
- What will the results be?
- How will decisions about purchases be made?
- How can technology benefit all students?

While each of these questions could be answered, it is more helpful in planning to put these questions into the much larger process that will be required for a successful use of technology - the change process. Beginning to use educational technologies and distance learning is a major change for many educational organizations. If the change is approached haphazardly, the possibility of a successful adoption decreases. The literature provides a number of general barriers to the use of educational technology. Among these are lack of information about technology (Baer 1978), enough time to develop widespread use (Baer 1978), an inappropriate match between technology and service (Lucas 1978), the panacea approach where technology is the solution (Benne, 1975), lack of money (Dirr in Barron 1987), lack of faculty commitment (Dirr in Barron 1987) and lack of trained support staff (Dirr in Barron 1987). Faculty concerns focus on class size, methods to provide discussion and face-to-face involvement and a lack of support for faculty from peers/instructors (Barron 1987). There is also a general feeling about machine mysticism (Pacey, 1983), where a misperception that technical advances always leads to progress. This is based on the myth that a cultural lag occurs everywhere as we try to keep up with progressive technology. Instead, technology should be used to answer new patterns of problems Pearson (1990) observes that "the literature lists major barriers to implementation. Lack of successful institutional planning for the delivery of distance education programs at educational institutions represents a major barrier to implementation and success." We now have an understanding of the critical events that are considered to be important to the planning and implementation and adoption of the innovation of educational technology and distance learning.

The Change Process

Planning for the adoption of distance learning programs has as its basis planning for change. Conley (1993) distinguishes between three types of changes that schools undergo, sometimes simultaneously. They are renewal, reform and restructuring, which Conley defines as follows:

- "Renewal activities are those that help the organization to do better and/or more efficiently that which it is already doing."
- "Reform-driven activities are those that alter existing procedures, rules, and requirements to enable the organization to adapt the way it functions to new circumstances or requirements."
- "Restructuring activities change fundamental assumptions, practices, and relationships, both within the organization and between the organization and the outside world."

From another perspective, four distinctive "change styles" have been identified. "No one style is usually seen in pure form, but a dominant orientation is usually present. For example, some organizations can only deal with change in the short term and actively seek to preserve the status quo by limiting their inquiry and resources to fine -tuning the existing system. Some even focus their change efforts on restoring education to a former, idealized, state (the 'good old days'). These are what we have called the inactive and reactive change styles. Schools operating in these modes tend to insulate themselves, ignoring demands from the larger societal environment.

Other organizations are more progressive and exploit opportunities for change as they present themselves (preactive style). The interactive style characterizes a strong systems-design oriented organization in which changes are initiated, designed and directed by members of the organization" (Benathy and Jenks, 1990). Table 1 describes the characteristics of the change styles.

Change Styles (Benathy and Jenks, 1990)			
	Reactive 1	**Inactive 2**	**Preactive 3**	**Interactive 4**
Attitude toward change	restoration, 'good old days'	maintenance, resist change	accelerate change, exploit opportunities	give direction to change, images
Arrow of time	reverse, "back to the basics"	remain in the present	look to the future, impatience	past, present and future integrated
Problem & change management	simple cause and effect explanation	delayed reaction, ride it out, return to equilibrium	rely on forecasts, fear of cost- regret	focus on what might be, design a desirable future, co-evolve
Role of science	experience is best teacher	current events provide necessary guidance	science of prediction, risk analysis, PPBS	disciplined inquiry

Role of technology	technology as cause of change	status quo, avoid technology unless it promises more efficiency or effectiveness	embraces technology as potential panacea	use technology as means to create the future
Organizational model	authoritarian	basically bureaucratic	purposive, ends-autocratic means-democratic	system integration
Organizational culture & values	nostalgia	preoccupation with customs, rules, conventions	inventiveness, growth	humans as ideal seeking not just end seeking
Approach to planning	top-down, perhaps ritualistic	focus on maintenance	top-down, predictive, contingency planning	planning to achieve ideal future
Working with problems	piecemeal	disjointed, incrementalism 'muddling through'	shift emerging problems to the future, postponement	identify the right set of problems
Attractiveness	maintains a sense of history, continuity, security	some problems fade if left alone, avoid big mistakes	progressive	best chance of coping with complexity

Planning for Educational Change

Planning Models and Paradigms

There are a number of planning models that are appropriate to use to foster educational change. Conley (1992) provides an overview of educational planning models and paradigms. Friedmann and Hudson (1974) identify four major intellectual traditions in planning theory: philosophical synthesis, rationalism, organizational development, and empiricism. Planning is seen as the process to link knowledge with action. It is both professional activity and social interaction and serves to link knowledge and authority, to translate concepts, ideas and information into practice via organizational implementation processes.

Philosophical synthesis encompasses the work of Etzioni (1969) and Friedmann (1978; 1984) who view planning as a social process primarily. It "seeks insights into the social, economic, and ethical conditions as well as the environmental contexts of the institution or sector for which planning is being undertaken." (Adams, 1991)

"Rationalism has been the dominant approach to planning theory, with its view of people as a utility and human relations as an instrumental process. Rationalism assumes that the world is a comprehensible environment and that complex, often contradictory conditions can be understood by reducing them to manageable simplifications, often based on data." It emphasizes development of goals and action plans, followed by systematic implementation and regular evaluation of the plans to determine progress toward the goals. (Conley, 1992)

"Organizational development traditions in planning are concerned with how to bring about change in organizations. Here people are valued and the human relations dimensions of interaction are emphasized. Planning focuses on "innovation and attention to change in management style, employee satisfaction, decision-making process, and the general health of the organization" (Adams, 1991).

"Empiricist planning methods rely to a greater degree upon the analysis of data and the consideration of systems behavior as primary frameworks for understanding planning needs. Empirical approaches are less concerned with issues of planned social change than with systemic problem solving within the bounds of structured rationality. Empirical planning is often conducted by policy scientists or political leaders, and employs systems analysis, cost-benefit analysis, and decision theory It relies on programming, budgeting, and evaluation of management through methods such as management by objective to control the implementation process " (Conley, 1992).

Planning models are typically based upon a combination of objective and subjective social paradigms. Objective paradigms incorporate positivistic assumptions from the physical and social sciences. Subjective paradigms are built around the concept that individuals create their own subjective reality, and that reality must be understood from t he perspective of the individual (Adams, 1991). These form the basis for rational and interactive planning models.

Rational models are based on positivistic assumptions, including:

- articulation and attainment of clear organizational goals
- use of a systems theory perspective in which the organization is treated as the primary unit of analysis
- involvement of a planner serving in an objective, value-free and apolitical role to provide technical expertise in development, implementation and evaluation of planning
- establishment of a direct and systematic link between planning an subsequent decision- making process to ensure all realistic and feasible options are considered (Hamilton, 1991)

The interactive perspective assumes "planning is first and foremost a social and political activity" (Hamilton, 1991). "In this context, technical procedures and methods are not necessarily ignored, but are recognized as tools with certain inherent potentials and limitations. It is the job of the planner to match the proper tool with the appropriate applications within the planning process: no tool is automatically the right one. The ways in which people interact with the application of the planning tools effects the results of the planning process" (Conley, 1992).

Malan (1987) describes this social dimension of the planning process. "Educational planning can also be analyzed as a social process, during which the techniques and methods used are subject not only to discussion and to methodological and theoretical choice, but also to debate and may be put to political and pragmatic uses. How these techniques are used reveals the consensus and divergence, as well as the cooperation and conflict, that exist between actors whose systems of action reflect the issues at stake in the struggles for influence between the social and occupational groups concerned with educational policy and management." In this approach, human beings are assumed to have personal constructions of reality that guide their behavior and decisions. Universal laws to explain organizational behavior are inherently limited by the fact that organizations are nothing more than a collection of individual whose collective versions of reality constitute the organization. Planing, then, is not merely a series of sequential activities designed to lead in linear fashion to collective activity, but a continual process of "interaction-interpretation-decision-further interaction - reinterpretation, etc.' (Adams, 1988) designed to provide greater meaning to the individuals who comprise the organization (Conley, 1992).

Long-Term vs. Strategic Planning

From a different perspective, Benveniste (1989) contrasts strategic planning with comprehensive long-range planning. "The claims of expertise of strategic planners differ from those of comprehensive long-range planners. Where the latter can claim the attention of the Prince, his lieutenant and the stakeholders because they have an overall systems view that can provide a rational basis for selecting the best course of action, the former do not have such a view. Strategic planners rarely attempt a comprehensive, long-term view. Their contribution relies on their presentation of eventualities and their ability to point to the need for organizational integration and coordination to cope with these eventualities. If comprehensive long-range planning tends toward a unitary plan and a specified set of objectives, strategic planing is far more concerned with opportunities and contingencies."

McCune (1986) differentiates between long-range planning which typically begins with the assumption that the organization exists in a stable environment, and strategic planning which attempts to establish the organization's role within the context of a larger society that is changing constantly, based on data collected internally and externally. She sees strategic planning as a tool for transforming schools, and a process for organizational renewal and transformation.

Systems Planning

The systems design process begins by exploring the overall societal context in which education operates in order to define the societal functions of education. Systems designers ask such questions as:

What is the nature and what are the characteristics of the current post-industrial information age?
What are the educational implications of these characteristics?
What should be the role and societal function of education at this stage of societal development?
What new opportunities and resources might be available for carrying out the educational function?
What vision and what new image of education is emerging from this inquiry that might guide the design of a new system?
What kind of approach and what strategies will enable us to realize and implement that new system?

Throughout the inquiry process for educational systems design, questions like these become the basis for exploring, defining and describing an ideal system of education and working toward that system's development, implementation and continuing renewal." The inquiry and design process consists of four basic and interactive capabilities that organizations should possess. They "should be able to:

- describe and analyze their existing system to assess its appropriateness.
- design new systems representing how education ought to be conducted, given the characteristics and needs of the changing society
- develop and implement new systems
- manage the new educational system and the ongoing inquiry process " (Benathy and Jenks, 1990).

Incrementalism

Incrementalism is described by Linblom(1959) as the "science of muddling through." It assumes that decision making in reality is based on a limited number of choices within a narrow range that defines the organization's comfort zone of change. "Incrementalist approaches to planing have one apparent advantage; agreement on goals is not necessarily a prerequisite to action; agreement on policy is all that is needed. Incrementalism allows situational responses to pressure or interest groups even if overall goals are not clear. Past practice defines the range of options among which a choice is made.

Mutual adjustment is much easier with an incremental approach, since participants in the organization will likely be familiar with both the range of options and the specific action strategy adopted. Predictability is enhanced, uncertainty reduced. New roles take time and energy to learn. Incrementally recasting old roles may be more efficient and effective, so long as the changes required can be accommodated incrementally . . .

This model is non-planning as planning. There is no formal role for a planner, since everyone and no one is a planner. This strategy works best in relatively stable environments where there is adequate time for the incremental process to play itself out. It should be noted that not all incremental adaptation is necessarily good for the organization. Many small adaptations can remove an organization's ability to respond to major environmental shifts, or to capitalize upon opportunities. This approach to planning also tends to create an organizational culture with a cynical view of formalized planning approaches.

Outcome-Based Planning Model

Outcome-based education (OBE) provides a more specific model for planning for educational change. Spady (1994) describes OBE as "a comprehensive approach to focusing, defining, and organizing all aspects of the instructional and systems of schools. The instructional system includes things like goal setting, planning, curriculum, teaching, instructional tools and resources, and assessment of student learning. The credentialing system includes things like evaluation, grading, credit, record keeping and transcripts, reporting, promotion, and graduation standards. . .

In an Outcome-Based system, all of these instructional and credentialing components are defined, focused, and organized around the clear demonstrations of learning that a system regards as essential for all of its students, not around clock and calendar.

Outcomes are clear, observable demonstrations of student learning that occur a t or after the end of a significant set of learning experiences . . . Typically these demonstrations, or performances, will reflect three key things: 1.)what the student knows; 2.) what the student can actually do with what he or she knows; and 3.) the student's confidence and motivation in carrying out the demonstrations."

The purposes of OBE are to:

- ensure that all students are equipped with the knowledge, competence, and qualities needed to be successful after they exit the educational system
- structure and operate schools so that those outcomes can be achieved for all students

The two purposes of Outcome-Based systems are based on three key assumptions, or premises, that are backed by a great deal of research and practice over the past thirty years. They are:

- All students can learn and succeed , but not on the same day in the same way.
- Successful learning promotes more successful learning.

- Schools control the conditions that directly affect successful school learning.

The four principles which drive an Outcome-Based System are:

- Clarity of focus on culminating outcomes of significance
- Expanded opportunity and support for success
- High expectations for all to succeed
- Design down from your ultimate outcomes (Spady, 1994).

Developing a Plan for the Adoption of Distance Learning Programs

Blanchard (1994) suggests that we can "make the times changes faster" through planning. His recommendation for a "viable blueprint for the pending evolution (revolution?) is based on a study of six organizations (Beer, Eisenstat and Spector, 1990) on "the process of change that leads to performance improvement." The six-step change strategy which forms the basis of an action plan includes:

- Mobilize commitment
- Develop a shared vision
- Foster consensus
- Spread revitalization without directive
- Institutionalize revitalization through formal policies
- Monitor and adjust strategies

Mojkowski (1990) suggests that a strategic approach to technology implementation should include the following:

- Consider curriculum and learning outcomes first, then technology
- Link the use of technology to organizational priorities
- Develop a strategic sense guided by the organization's vision, mission, and goals
- Simultaneously transform and integrate technology in the learning and teaching process
- Document and evaluate the implementation

Farrell and Gring (1993) suggest another five-step model that is tied to a milestone timeline.

- Needs assessment; gathering and analyzing data (where are we today)
- Shared vision that leads to creating goals (where do we wish to arrive)
- Select goals - clarify, attainability, measurability and appropriateness
- Prioritize goals and write a plan (how do we get from here to there and when)
- Implement and evaluate the progress of the plan (how do we know when we have arrived)

Pearson (1990) identified a model specifically for distance education programs. There were nine elements in the program and to be successful, all must be followed. Note that the critical factors are considered to be important prior to, during, and following implementation of the program at the educational organization.

I. Decide to Plan for Change: Awareness

- Key Administrators
- Super Leader
- Understand Elements of Change
    - Flexible Environment
    - Policy
    - Philosophy
    - Leadership

II. Recognize a Real Need vs Perceived Need: Interest

- Identify the Recipient
- Why Have the Program? Who wants and who needs the program?
- The Competition: Who Else Is Doing It?
- Is the Program Really Needed?

III. Understand the Real Reason for Implementation: Advantage

- Value to the Organization
- Political Issues Involved
- Technology or Need Driven
- Competition Driven for Competition's Sake
- Philosophy of the Program
- Culture of the Organization Affects the programs: Political issues involved

IV. Mission of the Organization: Evaluation

- Does the Programming Fit the Organization's...Goals, Objectives, Quality Standards
- How Will This Help the Organization? If it won't, don't!
- What is the Driving Force to Market the Program?
- Will it Make Money?
- Will It Be Self Sufficient?
- How Large Do We Want It to Become?
- What Is the Return on the Investment ?

V. Plan the Program: Trial

- Time - Take the Time to Plan
- People - Faculty/Staff
- Space, Facilities, Equipment
- Production Capability
- Money - Now & Later

VI. Review What the Organization Does Now: Observability

- Will Distance Learning Duplicate Services? Classes, Staff, Departments
- Is the Organization Working Well In Training & Education
- Does the Organization Support Education & Training, Change, Technology
- Do We Have Enough People and Support to Add Change?
- What Are the Organization's Strengths and Weaknesses

VII. The Gap: Compatibility

- How Far to Go to Have a Successful Program
- Will the Organization Be Able to Change
- Subtract the Difference Between.... Where We Want to Be - Where We Are Now = The Gap
- Can We Do It?

VIII. Contingency: Pre-adoption

- Trial & Pilot
- Flexibility
- Client Needs
- Institutional Perceptions
- Success vs. Failure . What happens if...it won't, doesn't, can't, or if it is better or different

IX. Implementation: Adoption

Commit to the Ongoing Process

- Lead People
- Design Programming
- Train in...Production techniques and Technology
- Faculty Support
- Dollar Support
- Continued Resources - Finance the Program
- Plan for Change, Growth and On-going Growth
- Believe in the Program
- Garnish Support Again and Again
- Evaluate the Program

Pearson's study (1990) also identified twenty critical factors in rank order that must be implemented in order to have a successful adoption. The critical factors contain a planning model which include the steps of purpose, philosophy, organizational structure, people, finances, equipment and facilities. The study indicated that successful implementation depended upon the completion and thorough investigation of each of these critical factors.

- Identified need (perceived or real) for the program.
- Faculty and teachers supportive and given incentives for motivation.
- Funds for capital costs; production, equipment, facilities.
- Availability of on-going money for operations and expenses.
- Quality of the educational content of the program (evaluation).
- Adequate support staff to produce the program.
- Ensuring equivalent learning experience to remote students.
- Enthusiasm and belief by the institution in the overall distance education project.
- Identification of a visible, spirited key leader/administrator initiating program.
- Adequate receive sites, facilities, and staff.
- Availability of appropriate and specialized equipment to deliver the programming.
- Sufficient time for careful needs analysis; Identify the range of services and programmatic needs of students. Example: Number of people, type of courses, ages served, location.
- Ensuring equivalent status for remote students: i.e., credit, degree.
- Instructional design and TV production: the interactive components, length, frequency and number.
- Identification of a marketing plan for the network, system or program. Public relations with the public.
- Cost effectiveness: feasibility and justification for delivery system to students and institution.
- Identified or gathered support/partners for the program: industry, corporate, legislative, institutional.
- Ensure continued credibility of the program with the public, faculty, students, and supporters.
- Knowledge of educational administrators, teachers and staff at educational institutions on what distance education is and how to teach and use it effectively.
- Ability to accredit courses, offer credit or transfer credit across states or institutions.

In planning for the adoption of technology and distance learning programs it is important "not to overestimate how soon a new technology will change society and to underestimate the magnitude of its eventual effects. Typically, communications devices have their impact on institutions in four sequential stages:

Stage 1: The new technology is adopted by an institution to carry out existing functions more effectively

Stage 2: The institution changes internally - work roles, organizational structure -- to take better advantage of these new efficiencies

Stage 3: Institutions develop new functions and activities enabled by additional capabilities of the technology; as the roles of different types of institutions expand, new competitive relationships emerge

Stage 4: The original form of the institution may become obsolete, be displaced, or be radically transformed as new goals dominate the institution's activities" (Dede, 1991; Coates, 1977).

Why do agencies use distance learning programs? What needs do they fill? In a study of Star Schools Programs, Cradler and Cassidy (1994) found that overall, the projects and agencies used distance learning technologies and approaches to provide more equitable access of resources to students, educators, parents and community members, delivering:

- coursework otherwise unavailable
- modules of instruction which model curriculum and instructional practices to reflect the national guidelines and/or recommendation for various content areas
- experiences and resources, to which participants have no direct access, through electronic field trips
- opportunities for participants to interact with other participants of diverse backgrounds
- technologically-linked learning communities
- access to experts in a variety of fields
- career awareness
- programs which motivate students to become more involved in the study of various disciplines
- programs for successful learning experiences for all students: urban, rural, suburban, at-risk, limited English proficient, and gifted and talented.

Ohler (1991) found a number of ways that distance education has been used.

- To overcome geographic isolation in order to receive a state-sanctioned education
- To avoid or reinforce particular content.
- Because of incarceration.
- To avoid social influences.
- To experience or avoid certain learning dynamics.
- Because of a disability.
- To avoid having to abandon a life-style or culture.
- To avoid a schedule conflict.
- Because the student is not learning in school.
- To escape tracking.
- To learn in a more global context.
- To learn information-economy skills.
- Remediation.
- Because schools are too expensive for the state to provide.
- To improve local communications under certain conditions.

The following variables were identified which should form part of the implementation plan for distance learning (Cassidy, 1994):

- **Content** - how does the content fit into the curriculum program?
- **Delivery System** - what technology is utilized to deliver the programs and what is needed to receive and interact? Is it delivered live, interactive?
- **Hardware and Software Needs** - what is needed to receive and interact?
- **Instructional Materials** - are additional materials required or recommended?
- **Procedures and Costs** -are there membership, subscription, course, student fees?
- **Schedule** -is the program to be utilized on a specific schedule?
- **Staffing** - what personnel are needed to utilize the program?
- **Training** - what training is necessary for staff?
- **Support structure** - what support structure needs to be in place to assist staff or students to be successful in the program?
- **Evaluation** - what information is available from others about the success of this program? What is important as criteria for success with this program?

Conclusions

The adoption and diffusion of the innovation of educational technologies and distance learning should be designed as a process to introduce to the user community. The involvement of administrators is a given in the process, but teachers, staff, students, and the community served by the educational organization should be involved in the planning and implementation process at every level in order to ensure a successful adoption.

Users should be provided with the professional development opportunities necessary to gain familiarity with the technology so that they may be vested in the ownership and apply it in a way to support the learning styles of all learners. The appropriate attitude is to use educational technology and distance learning as tools for teaching and learning and to provide teachers with the support necessary to master the use of these tools and to apply them successfully in the curriculum.

It is becoming apparent that voice, data, and video technologies will be used for teaching and learning. The only acceptable minimum is to provide equitable access for all learners.

It is clear from other reviews that many technological reforms have not succeeded in schools. To be more successful in implementation and institutionalization, it is important for distance learning programs and other technological innovations to be tied to overall change efforts of the institution, and be an appropriate solution to specific needs. In order to do this, it is important to identify the type of change process the institution is conducting, the culture for change reflected by the change style of the agency, and the appropriate planning model(s) to make that type of change. Completing the planning and adoption process utilizing the models provided here increase the likelihood of successful adoption of the distance learning program.

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