

KEY INSTRUCTIONAL DESIGN ELEMENTS FOR DISTANCE EDUCATION

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Distance education professionals need to play multiple roles, one of which is instructional designer (Thach, Murphy, & Korhonen, 1994). However, there is little literature that reflects the instructor's views on the application of the different types of design elements in distance education courses (Koszalka & Bianco, 2001). The authors argue that distance education instructors need to understand and apply some important instructional design elements in order to exert a successful role of an instructional designer. This article reviews the most recent literature pertaining to designing instruction in distance education, identifies some key instructional design elements for teaching at a distance, and provides some suggestions on their application in the distance teaching process.

INTRODUCTION

Distance education has been growing rapidly in the past decade. Olgren (2000) points out that one of the major changes occurring on the front-line of distance education is the increasing number of distance education programs. He reports that over the past decade, there has been "a dramatic increase in the adoption of distance education methods" (p. 20). In the academic year 1994-1995, nearly 26,000 distance education courses were delivered via audio, video, or computer technology, enrolling more than 750,000 students. A total of 690 degree pro-

grams and 170 certificate programs were offered exclusively at a distance (Olgren, 2000). Also according to some estimates given by Griffiths and Gatien, "the distance learning market is now growing at a 25 percent annual rate in the U.S. and represents \$ 3.5 billion in annual revenues for postsecondary education" (cited in Olgren, 2000, p. 20). Therefore, great progress has been made in distance education offerings in the past decade. Because learning at a distance can bring many advantages, there has been a growing demand for distance education.

The instructor's role is very important in terms of teaching at a distance. Willis (1994)

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states that to a great degree, "the success of any distance education effort rests squarely on the shoulders of the faculty" (p. vi). When teaching at a distance, according to Willis (1994), the instructor is confronted with special challenges that include: develop an understanding of the characteristics and needs of distant students with little first-hand experience and limited, if any, face-to-face contact; adjust teaching styles and course content and consider the needs and expectations of multiple, often diverse audiences; develop a better understanding of delivery technology and staying focused on teaching role; and work effectively as a skillful facilitator as well as content provider. Willis implies that instructors play a key role in the distance education process. Thach, Murphy and Korhonen (1994) identify 11 roles for distance education professionals. These roles might be assumed by one individual or by several individuals. One of these roles is instructional designer. However, there is little literature that describes how distance instructors engage in this role in their distance teaching process. Thus, additional attention needs to be paid to how they look at their role as instructional designers and how they apply instructional design elements in distance teaching courses. We argue that distance education instructors need to understand and apply some important instructional design elements when they teach at a distance. The goal of this article is to provide some guidance on what design elements distance education instructors need to understand and how they should apply them in distance education courses. This article will offer some suggestions that may help to direct instructors' efforts in meeting such challenges when teaching at a distance by identifying some important design elements through analyzing some of the most widely used instructional design models and key design issues related to teaching at a distance and examining how those elements can be applied in the distance teaching process in an attempt to clarify issues related to such an application.

TOWARD THE SOLUTION: DESIGN OF DISTANCE EDUCATION BY APPLICATION OF KEY INSTRUCTIONAL DESIGN ELEMENTS

Instructional design is highly valued by faculty when designing learning experiences. Piskurich (2000) explains the importance of instructional design as follows:

The instructional design will help you create good, clear objectives for your program that can be understood and mastered by your trainees. It will help you develop evaluations that truly test for the knowledge and skills that our objectives are based on. It will help you or whoever instructs that course to facilitate the participants' learning effectively and efficiently and, most important, it will help you make sure that what is in your program is what your trainees need to learn. This reduces wasted time, wasted money, and wasted opportunities for helping to develop more effective employees who, through their knowledge and skills, increase corporate profitability. (p. 3)

Piskurich' views identify the worth of instructional design as a process to ensure quality instruction.

Dijkstra (1997) gives an explanation of the relationship between process and product in terms of instructional design by asserting that instructional design refers to "a certain mode of producing or developing instruction as well as to a product that defines an educational setting" (p. 27). This means that instructional design is a process in which a product is generated in an educational setting. Thus, instructional designers have to be concerned both with the aspects of process and product when designing instruction.

Instructional design or development models are useful in the instructional design process. Several models can be used to design instruction of units and lessons. In 1990, Dick and Carey developed one of the most widely used models (Gustafson & Branch, 1997). This model involves nine stages: identifying an

TABLE 1
Key Elements of the Instructional Design Process

<i>Instructional Design Elements</i>	<i>Dick & Carey</i>	<i>Kemp, Morrison & Ross</i>	<i>Smith & Ragan</i>
Instructional Goals	X	X	
Learner Characteristics	X	X	X
Learning Context			X
Learning Task/ Content	X	X	X
Instructional Objectives	X	X	
Selecting			
Instructional Strategies	X	X	X
Media and Materials	X	X	
Assessing Learner Performance	X	X	X
Resources		X	
Producing Instruction			X
Revising Instruction			X

instructional goal, conducting a goal analysis or instructional analysis, identifying entry behaviors and characteristics of learners, writing performance objectives, developing criterion-referenced (objective-referenced) test items, developing an instructional strategy, developing and selecting instructional package materials, designing and conducting formative evaluations, and designing and conducting summative evaluation. This model is valuable because it introduces the concepts and applications of the systematic design of instruction to people who are new to the field (Gustafson & Branch, 1997).

Kemp, Morrison and Ross (1994) identified nine elements that should receive attention in a comprehensive instructional development plan: identifying instructional problems, and specifying goals for designing an instructional program, examining learner characteristics that should receive attention during planning, identifying subject content, and analyzing task components related to stated goals and purposes, stating instructional objectives for the learner, sequencing content within each instructional unit for logical learning, designing instructional strategies so that each learner can master the objectives, planning instructional delivery within three patterns for teaching and learning, developing evaluation instruments to assess objectives, and selecting resources to support instruction and learning activities. This model emphasizes subject mat-

ter content, goals and purposes, and selection of resources (Gustafson & Branch, 1997).

Smith and Ragan (1993) created an instructional design process model that is "becoming increasingly popular for students and professionals in the fields of instructional technology who are interested in the cognitive psychology base of the ID process" (Gustafson & Branch, 1997, p. 68). Their approach includes eight steps: analyzing the learning context, analyzing the learners, analyzing the learning task, assessing learner performance, developing instructional strategies, producing instruction, conducting evaluation, and revising instruction. This model is useful when introducing the philosophy and theory of the systematic design of instruction to practitioners in educational field (Gustafson & Branch, 1997).

Though the models emphasize different aspects of instructional design process, they all share four similarities in common—they all include the following elements: learner considerations, content organization, instructional strategies, and evaluation. (See Table 1) Thus, these four elements are four key elements in the instructional design process.

Instructional design is important to distance education. The most critical aspect of successful distance education is good planning, because planning for effective teaching is necessary for learning to occur (Smaldino, 1999). Instructors who teach at a distance are confronted with many new challenges. Limited

instructional design knowledge and skills are a factor in faculty development of quality instruction (Moore, 1997). However, instructors will obtain a lot of benefit if they understand and apply instructional design elements in their design for distance teaching. Therefore, it is essential to take key instructional design elements into account when designing instruction at a distance. To secure the success of the planning, distance-learning faculty should pay attention to some key issues regarding designing instruction at a distance. According to Simonson, Smaldino, Albright, and Zvacek (2000), the following issues need to be considered:

1. Who are the learners? The instructors need to have knowledge of learner characteristics. This knowledge about the learners can help the instructor handle the separation of instructor and students successfully.
2. What is the essential content? The content of a course should reflect where this content relates to the rest of the curriculum. Thus, instructors need to consider the nature of the content, and the sequence of information. Generally, the scope of the content for a course needs to be sufficient to ensure that the entire learning experience will result in the desired outcomes. Thus, the identification of goals and objectives for instruction is necessary.
3. What teaching strategies and media should be used? It is essential to make the learner participate when distance educators decide which strategy or strategies to use. The instructor needs to think about selecting those instructional strategies that enable all the learners to participate in active learning. Doing so can ensure that students will be harmonious with the class.
4. What is the learning environment? To completely understand distance education, one must examine not only the technology, but also the learning environments that are created (Herring, &

Smaldino, 1998) because learning environments, as a class of systems, integrate, to different degrees, tools, resources, and pedagogical features that enhance student comprehension (Hannafin, 1992).

5. How do you determine the quality of the instruction? Here, the issues the instructor needs to address, when teaching at a distance, include general learner characteristics, the nature of content, teaching strategies and media selected, the learning environment and evaluation.

Moore and Kearsley (1996) stated that many questions need to be addressed in the design of a distance education course or program, including:

- What content should be included or left out?
- What is the best way to sequence and organize the material?
- What are the best media to use to present the material?
- What kind of teaching strategies should be employed?
- How can learning be measured most appropriately?
- What feedback should students receive about their progress?
- What methods should be used to create the materials?

Moore and Kearsley stressed such issues as content organization, media selection, teaching strategies, evaluation and materials creation that are all connected with how to meet needs of learners.

Sherry and Morse (1995) also argue that teachers take interest in specific areas of the instructional system design process, such as determining how much content to put into a single lesson, diversifying types of presentation and course activities, designing ancillary materials, developing courseware, assessing teacher effectiveness and student learning, and revising learning modules to fit student needs. Sherry emphasizes the issues including con-

TABLE 2
Key Elements for Designing Instruction at a Distance

<i>Instructional Design Elements</i>	<i>Simonson, Smaldino, Albright & Zvacek</i>	<i>Moore & Kearsley</i>	<i>Sherry & Morse</i>
Learner Considerations	X	X	X
Learning Task/ Content Selecting	X	X	X
Instructional Strategies	X	X	X
Media	X	X	X
Learning Environment	X		
Assessing Quality of Instruction	X	X	X
Materials		X	X

tent, instructional strategies, the development of materials, the use of media, assessment. These issues need to be considered surrounding how to address learner needs as well.

When discussing the issues related to the design of instruction in distance education, the cited authors all address the issues associated with learner considerations, content organization, instructional strategies, distance education technology characteristics, and evaluation. (See Table 2) These issues match those identified earlier as essential to instructional design with one added element, the distance education technology environment. Therefore, these issues can be considered as key elements for designing instruction at a distance. We suggest that distance education instructors understand and apply these identified key elements in their distance teaching process in order to ensure the optimal learning outcomes take place.

APPLICATION OF THE IDENTIFIED INSTRUCTIONAL DESIGN ELEMENTS FOR TEACHING AT A DISTANCE

Since teaching at a distance is not an easy task, our purpose is to find a solution to help distance education instructors design distance education courses. To achieve this aim, it is necessary to elaborate on those common identified instructional design elements in order to provide a better framework for faculty to com-

prehend and apply those elements when designing instruction in a distance education setting.

Learner Considerations

It is important to consider learner characteristics and needs in the design of instruction in distance education because "it is not just the learners' presence but also the characteristics and needs they bring with them that influence the design, structure, and operation of a distance learning system" (Chute, Thompson, & Hancock, 1999, p. 66). These characteristics and needs affect the system as a whole because "any action in one part of the system cannot help influencing (in at least a small way) the other parts" (Chute, Thompson, & Hancock, 1999, p. 66). In the following, some of the most important aspects associated with the distance learners in terms of addressing their needs are examined.

General Learner Characteristics

Simonson, Smaldino, Albright, and Zvacek (2000) claim that each individual learner is unique and those unique characteristics need to be identified. Those characteristics can have a great impact on the distance learning outcomes. Those characteristics include attitude or interest, prior skills, knowledge, experience, and learning styles.

Interactivity

Interactivity is one of the crucial elements regarding learner considerations in terms of distance education. As Belanger and Jordan (2000) state, instructors and participants should facilitate all types of interactions in distance learning courses because interaction can reduce the sense of isolation of individual participant attending distance courses, make participants adjust themselves to new environment more flexibly and add the variety of experiences individual learners have, which may include multicultural environments, broader age range of learners, or greater expertise of all learners combined. Moore and Kearsley (1996) propose three types of interaction that have to be practiced by distance teachers. They are learner-content interaction, learner-instructor interaction and learner-learner interaction. Learner-content interaction refers to the interaction that the student has to deal with about the subject matter presented in study. Education is a process of learning provided by a teacher or institution. Each learner has to obtain knowledge by personally modifying information to fit former cognitive structures. It is just a process of interacting with content that causes the changes in the learner's understanding in perspective, and their constructs in knowledge. Learner-instructor interaction is a communication between the instructor and student and can be reinforced by face-to-face talk, phone conversation, e-mail, etc. The third kind of interaction is learner-learner interaction that is interaction between one learner and other learners, alone or in group settings, with or without the concurrent presence of an instructor (Moore & Kearsley, 1996). Learners need this kind of interaction because of the complicated circumstances for the learners related to their age, experience, and level of learner autonomy. Learner-learner interaction among members of a class or group can be an extremely valuable and essential resource for learning; individual interaction can be enhanced through peer group interaction by

asynchronous e-mail and by synchronous computer conversations (Moore, 2000/2001).

When distance instructors address the issue of learner considerations, they need to take these three kinds of interaction into account. Specifically, they need to design and organize courses to ensure that there is each type of interaction and provide the types of interaction that is most appropriate for the various learning tasks for different content areas for learners at different stages of growth. The major weakness of many distance education programs is that they commit to a particular communications medium; when there is only one medium used, probably only one kind of interaction is facilitated well. This indicates that distance instructors need to think about using all three kinds of interaction by using variety of media (Moore & Kearsley, 1996).

How Faculty Support Distance Learners and Meet Their Needs

Instructors teaching at a distance need to be aware of providing frequent and adequate feedback to support these learners (Gibson, 1998, p. 49). Student needs and limitations need to be understood in every aspect of the distance education program. Successful student support is an indicator of the result of every aspect of the program, "from a prospective student's first awareness of the program to graduation day, working in an integrated fashion to maintain the student's engagement and progress" (Granger & Benke, 1998, p. 128). Distance students find programs supportive because faculty and staff design the program with the consideration of their needs and expectations of a responsive program (Granger & Benke, 1998).

Faculty need to be involved in program design and delivery. The faculty who teach the courses often connect the academic program and the student with academic and support services. Because distance learners need knowledge of assignments in advance, structure, and prompt feedback, faculty should be prepared to prepare those elements effectively in dis-

tance instruction. The instructors also need to incorporate experiences, goals and expectations of the learners into the learning activity. Faculty who assess expectations and skills of distance learners through administrative and support services can also assist students in the learning processes. (Granger & Benke, 1998)

Rowntree (1992) states that distance learners probably need more individual personal support than general support (as cited in Reid, 1995). Dekkers and Cuskelly (1990) stress that distance learners are not generally isolated by choice, and that open learning centers play an important role in facilitating interaction with staff and student instead of taking mere minor responsibility sometimes ascribed by institutions. They identify four important areas associated with a student perspective (as cited in Reid, 1995): access to academic support and other students—preferably by direct contact; student learning characteristics—adaptation of a variety of learning styles instead of mere stress on study packages; access to library and other resources to learning—particularly for independent study materials; understanding of the student learning environment and background—realizing the family and work commitments of students. These statements indicate that there is a need for student support in the aspects such as direct interaction with teachers and other learners, instructor studying and adapting different kinds of learning styles, having access to library and other resources, and getting familiar with learner background. However, how to help distance learners accomplish the above mentioned learning support will bring many challenges.

How Faculty Help Students Get Comfortable with Distance Learning

When implementing distance learning, it is important to get people to use and support the system (Chute, Thompson, & Hancock, 1999). Thus, it is important to make distance students feel comfortable with distance learning. The distant instructors can help distance learners to get used to using the distance learning system

and become comfortable with learning in distance learning environment. They can help students bridge the gap by providing channels for interaction, access to resources, and help with technology.

Students as Factors of Design

Distant learner satisfaction is an important aspect in understanding the success of distance education. Thus, distance instructors need to consider student satisfaction factors when designing instruction at distance.

One of the basic instructional design principles is to plan the content around the needs of the audience and engaging the learners (Fisher, 2000/2001). Distant instructors need to choose effective teaching strategies to deliver instructional content to achieve the ideal learning outcomes. The major barriers Kelsey (2000) shows for the successful organization of content in interactive compressed video classes are associated with students publicly asking questions before the larger learning community and time constraints for processing content. These barriers are possibly caused by the particular features of distance learning such as the separation of the learners from instructors, and the use of electronic communication technologies. Instructors need to work out some related instructional strategies intended to fit their teaching format in the unique distance-teaching environment for the purpose of ensuring learner participation.

The students' perception of interaction is essential. Courses designed for distance learning should produce successful interaction since interaction provides assistance for students to get over the sense of isolation and loneliness distance learners might have in the distance learning setting. Fulford and Zhang (1993) also emphasize that a crucial indicator of distance students' satisfaction was their perception of overall interaction. The survey conducted by Sorensen and Baylen (2000) shows two problems concerning interaction: teacher-student and student-student interaction. These findings imply that instructors

need to be more involved in the across-site activities so as to increase the interaction with the students and that the instructors also need to create more opportunities for students at the host-site to interact with the students at other sites. Kelsey (2000), in a study investigating participant interaction in a course delivered by interactive compressed video (ICV) technology, identified some of the student perceived barriers to interaction in such a course. One of those barriers related to the use of the technology is camera shyness. Sixty-two percent of the students reported that they had anxiety about being seen on camera. When the site facilitator did not display the picture-in-picture (PIP) feature on the ICV monitor, the students would feel more comfortable asking questions for they could not see themselves. Students at the original site indicated that camera shyness was a more serious issue for them than for remote site students as their larger-than-life-size image was displayed on a screen in the front of the room.

One characteristic of distance learning is its association with high dropout rates at least in comparison with conventional institutions. Clearly there will always be some dropout. As distance learning opportunities grow, so competition mounts. Where students have a choice they will judge institutions by the quality of the design product they produce. Therefore, in order to maintain retention, it is essential to acquire student perceptions of the designed product.

Lockwood (1995) conducted a qualitative study by collecting data through interview, questionnaire and self-recorded audiotape with the purpose of exploring students' perceptions and response to assessment material. He observe, through the analysis of the interview transcripts, questionnaire responses and self-recorded audiotapes, three common features students regarded as benefits to their study. They are course-focused, self-focused, and assignment-focused benefits. Course-Focused Benefits are those regarding students' learning from the course—the concepts, ideas, and arguments under discussion.

These activities help students to understand the course material. Self-Focused Benefits are those related to a student's learning and development as person; "the opportunities they provided for ideas and arguments to be explored or reconsidered, previous assumptions challenged and personal interest awakened, developed or extended" (Lockwood, 1995, p. 202). The essential feature is that one thinks critically, or question the materials. Assignment-Focused Benefits indicate those associated with directly answering an assignment that offers an opportunity to think about the issues to be discussed in an assignment or which supplies materials to be used in it. These perceived benefits indicate that if the learning activities help students to understand the course material, think critically, or answering the questions regarding assignments, students would consider the course as a good one. Otherwise, they would feel unsatisfied with the quality of the course or the product of the instructor's design. Lockwood's findings are significant because they provide important implications on those aspects in which distance instructors need to examine and evaluate their course product.

There are factors perceived by students which instructors need to take into account while addressing student needs when they design instruction at a distance. These issues need to be addressed in order to ensure the quality of learning in the distant environment.

The Design for Content Organization in Distance Education Courses

Content organization is very important in achieving learning objectives: the way in which to organize the content may affect the learning outcomes directly. In a distance education setting, how to organize content seems even more important. As Willis (2000/2001) explains classroom instructors depend on a number of "subtle visual cues from their students to enhance their delivery of instructional content" (p. 197). This is true because it is easy for them to distinguish students who are care-

fully taking notes, thinking about a difficult concept, or prepared to comment from students who are frustrated, confused and tired. The thoughtful teacher consciously and subconsciously, observes and analyzes these visual cues and adjusts the delivery of content to meet the needs of the students. The distant teacher, however, may have access to few visual cues. Thus, it is difficult to implement an exciting teacher-class discussion, especially when technical requirements and distance change the spontaneous state of the class (Willis, 2000/2001). Distance instructors need to realistically assess the quantity of content that should be effectively delivered in the course since delivering information in a distance course often takes more time than presenting the same amount of information in a traditional classroom setting (Willis, 2000/2001).

Gibson (1998) believes that all distant learners need: content that meets their needs; obvious directions for their actions at each phase of the course; as much control of the pace of learning as possible; a means of drawing attention to individual concerns; a method of investigating their progress and acquiring feedback from their instructors; materials that are useful, active, and interesting. Here, Gibson stresses the importance of taking learners' needs into account when discussing course content in distance education.

Instructional Strategies

Distance education is an opportunity for instructors to revisit techniques for teaching, for it incorporates both place and time shifting (Herring & Smaldino, 1998). A place shift indicates that all the participants in the class are not in a single location; a time shift suggests that the instruction is not live. Even the most experienced educators are faced with the instructional challenges of these two aspects of distance learning (Simonson, et al., 2000). Instructors often feel that "the focused preparation required by distance teaching improves their overall teaching and empathy for their student" (Willis, 2000/2001, p. 197). This

implies that though encountered with great challenges it is still possible that instructors who teach at a distance will overcome the related obstacles and achieve teaching effectiveness through constant effort.

Willis (2000/2001) claims that "for the most part, effective distance teaching requires the enhancement of existing skills, rather than developing new abilities" (p. 199). According to him, some of the issues distance instructors need to pay special attention to include the following:

- Diversify and pace course activities; do not use long lectures. Combine content presentations with discussions and student-centered activities.
- Use locally relevant examples as often as possible to help students to comprehend and apply course content. The earlier this is done in the course, the better.
- Be concise. Employ short, cohesive statements and direct questions because using technical equipment may take more time for students to respond.
- Cultivate strategies used for student reinforcement, review, repetition, and remediation. To reach that aim, one-on-one phone discussions and electronic mail communication are particularly favorable.
- And finally . . . relax. Participants will quickly become comfortable with the process of distance education and effective teaching will be resumed.

These effective teaching strategies can be used to facilitate effective distance learning. However, what is important in determining which strategy or strategies to use is the issue of engaging the learner (Smaldino, 1999). Since distance learning is a learner-centered approach, methods that focus on the learners and incorporate interactivity have been shown to be most successful. Instructors need to consider a variety of techniques in order to involve learners in active learning experiences (Simonson, et al., 2000).

Issues Related to Using the Internet and ITV for Teaching and Learning

According to the U.S. Department of Education, National Center for Education Statistics (1999), the Internet and ITV are the two most popular delivery technologies used in distance education. They have greatest potential in the application of teaching at a distance. However, while using them in instruction, instructors frequently come across different kinds of problems that prohibit them from using the two technologies smoothly. Therefore, it is necessary to investigate issues and concerns regarding the distant instructor using the Internet and ITV for teaching content.

Wang-Chavez and Branon (2001), in their study, investigated the instructors' participation in WWW/Internet-based instruction. They observed the visible interaction occurring on one course Web site. Through the analysis of the evaluation data, they identified three general major difficulties with the instructor use of the Web for instruction. First, very little interaction took place on the course message boards during the early part of the semester. One of the causes for this lack of interaction with students lay in the fact that most of the students had never had the experience of taking an online class before; they did not know how to communicate by using the related courseware. Besides, the instructor did realize this lack of student involvement in the class; however, he did not have more time to promote the students' online communication due to the heavy teaching work. The second major difficulty was connected with the quantity of feedback students were getting from the instructor. The same reason (time shortage) restricted the amount of individual student feedback students got from the instructor. The professor hoped students would interact more with each other and learn from each other instead of depending on him to get plenty of the feedback. The third major problem refers to standards for the class. Students stated that they were not clear about how the instructor was evaluating them. This was especially the

case with the participation part of their grade. They suggested that clear and specific guidelines about how participation was being evaluated (for example, by number of message board postings, depth of the posts, etc.) would be helpful with the clarification of the students' confusion. Similarly, students also need clear guidelines for group projects to address their concerns about group work. This would result in more participation from group members.

Moore and Koble (1995) offer some implications for training of faculty who use interactive television. The need for training of faculty before teaching an interactive television course is obvious. First, instructors identified traditional instructional methods as ineffective in the televised courses. However, instructors kept using these methods. Furthermore, the instructors suggested that instructional methods that integrate more audio-visual materials are effective in the interactive television classroom, but they failed to use such materials. Future research needs to prove that instructional methods that students identify are as effective as those identified by the instructors. A much stronger case can be established to combine audio-visual materials, and to train the development and use of such materials, when instructors and students both consider them to be effective methods of instruction in an interactive television course. Another training issue concerns the instructors' perceived need for hands-on training. Instructors do not like to be told how to teach; instead, they intend to get a feel for the equipment and the effective specific techniques they need to use in interactive television classrooms. Finally, there was the need for good system support. This embraces properly trained technicians, remote-site coordinators or facilitators, technical troubleshooting personnel, and orientations of students to the system prior to the class. The findings of Gehlauf, Shatz, and Frye's study conducted in 1995 which investigated faculty perceptions of interactive television instructional strategies support what Moore and Koble have found here.

The issues and concerns discussed by Wang-Chavez and Branon, and Moore and Koble should not be neglected by instructors who teach at a distance. These issues and concerns generally include student lack of interaction with each other because they were inexperienced in taking an online class or because they did not know how to use the related courseware, students getting insufficient feedback from the instructor who is too busy with the coursework, students are unaware of appropriate standards by which their coursework is evaluated; instructor need for training students in using equipment, developing effective audio-visual materials and handling system issues such as dealing with technicians and remote site coordinators, and the need for good system support.

Investigating student perceptions of the use of the Internet and ITV in learning is very important for it can help to identify the related problems or issues which need to be solved or addressed. Wang-Chavez and Branon (2001) did formative research on improving an online undergraduate business course to facilitate web-based instruction. One of the consistent results of their research is that students enjoyed the flexibility and convenience of attending an online course. Other findings suggest that students also valued the professor's patience and understanding in dealing with problems they faced. Some students enjoyed the group work and online discussions. However, students identified some prominent themes regarding problems and concerns that occurred from the qualitative data analysis which included concerns about taking an online exam for fear of technical problems, the fairness of the group work assessment, etc. Student perceptions of an online course presented here provides some valuable insights into how involved parties improve future online courses.

Thomerson and Smith (1996), who did a study to investigate student perceptions of the affective experiences encountered in distance learning courses in which ITV was used, found that there are some areas that need to be

improved in the distance program at Valdosta State University. They indicated that many remote-site students found difficulty hearing at off-campus sites. There were also audio problems. Both the remote- and host-site groups suggested that the distance learning equipment led to any distractions. Down time was the biggest problem. Many remote- and host-site students found variety of equipment problems that interrupted class. Other distance-learning students complained about making adjustments in the equipment in order to get all sites together on line appropriately led to the loss of some class time. Host-site students did not understand these problems better. Many host-site students did not want to tolerate these problems since they could not find any benefits for themselves. Findings from this study have shown that instructors need to develop appropriate strategies to improve the affective aspects of students' learning experiences, specifically those of both remote- and host-site students. Strategies for improving the host-site experience are essential. Host-site students were not willing to take a distance-learning course. One possible suggestion might be simply to not include the host-site group so that the instructor would be able to concentrate entirely on students at the remote sites. Host-site students could attend traditional-classroom courses in order not to be disturbed by any of the distractions caused by the distance learning experience (Thomerson & Smith, 1996).

The above issues and problems related to using the Internet and ITV for teaching or learning are critical for the success of distance education programs. To make distance education more effective, these concerns need to be addressed.

Evaluation of the Design Product

Evaluation is an important procedure in the instructional design process in distance education because as Morgan and O'Reilly (1999) state, teachers need

- to know if students are attaining the intended learning outcomes;
- to know if course materials and teaching activities are effective;
- to be able to certify that students have achieved standards or met requirements.

There are many benefits to doing evaluation as a continuous process. Belanger and Jordan (2000) suggest three benefits:

First, it is the only way to determine whether or not, and to what degree, instructional objectives have been met. Second, it is the only way to determine, post hoc, what the actual return on investment has been. Third, evaluation results provide valuable feedback so that the program can be continually improved. (p. 186)

These benefits of doing an evaluation indicate the chief purposes for doing evaluation in an educational program. They can be considered as the starting-point from which to think about evaluation of an educational program.

How to Monitor and Evaluate the Quality of Instructional Design

Chute, Thompson, & Hancock, (1999) confirm that evaluation is an important part of the design of distance learning systems and programs. They continue to state that the most direct measure of program effectiveness should center on the quality of the individual learning experience. They propose three factors requiring consideration for assessing such effectiveness including the amount learned, the integration of learned skills into practice, and self-reported satisfaction with the learning experience. First, distant instructors need to consider the amount learned by the learner. The evaluation or assessment activities should concentrate on measuring the extent to which students have accomplished the assignments or met the requirements described in the course objectives. The rationale for measuring the amount learned by a distance learner is the same as that for assessing the learning of a stu-

dent in the traditional classroom. However, the strategies and procedures used in such measurement have to be revised to fit in the distance learning setting. Second, the distant instructors need to think about integration of learned skills into practice. Training and formal education provide opportunities to gain skills and knowledge that can be used in practical situations. Thus, the distance instructor should assess the extent to which distance learning can make such transference. Workplace setting can provide opportunities for a more direct assessment of learning outcomes. Third, the distant instructors need to examine learner satisfaction with distance learning. Satisfaction with the media and processes that form the learning environment is a major element to evaluate whether students are willing to continue to attend distance education courses.

Designing Assessment Tasks

Designing assessment tasks is a crucial activity in the earliest stages of subject design and development and distant instructors can follow some ways to start to design assessment tasks (Morgan & O'Reilly, 1999). These approaches include aligning assessment with the objectives, selecting appropriate assessment tools to ensure that the assessment process is possible in a distance-learning environment. Morgan and O'Reilly indicate that when instructors teaching at a distance are involved in designing assessment tasks, they need to consider if the assessment is clearly aligned with subject aims and objectives because content, teaching, and learning activities for a well-aligned subject are more likely to bring about a deep approach to learning. In addition, instructors also need to consider broadly knowledge, skills and attitudes that can be developed in learners through assessment and seek diversity in methods that enhance the broadest range of vocational and disciplinary skills. They also need to choose methods that are appropriate to desired outcomes and think creatively about perceived

difficulties—just about everything that can be assessed at a distance.

CONCLUSIONS

Distance education continues to exert its potential in the educational setting, “educators and designers need to increase their innovation in distance education by designing for instructional effectiveness” (Carr & Carr, 2000, p. 324). In order to be successful in meeting the new challenges that distance education instructors are faced with and make the learning outcomes more optimal they need to understand and incorporate some important instructional design elements in their distance education courses. A better understanding and application of the identified instructional design elements discussed in this article will help the instructors who teach distance education courses accomplish successful design of instruction in their distance teaching process.

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