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# Teachers' perceptions of the application of instructional design elements in the distance teaching process

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TEACHERS' PERCEPTIONS OF THE APPLICATION OF INSTRUCTIONAL  
DESIGN ELEMENTS IN THE DISTANCE TEACHING PROCESS

A Dissertation


Submitted


In Partial Fulfilment

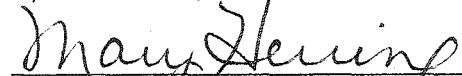
of the Requirements for the Degree

Doctor of Education


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December 2003

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An Abstract of a Dissertation

Submitted

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Doctor of Education

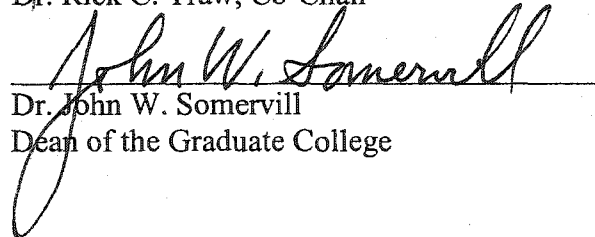
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## ABSTRACT

Educators use an instructional design process to improve instruction and to ensure learning. Faculty who teach at a distance must rely heavily on the instructional design process because of constraints in distance instruction. Thus, it is especially important for instructors to know, understand, and apply instructional design elements when planning to teaching at a distance. However, little research has been done in this field. Therefore, additional research has become the focus of this study. This study examines the perceptions of instructors at the University of Northern Iowa (UNI), Cedar Falls, Iowa, regarding how they understood and applied instructional design elements in the distance teaching process.

A descriptive study approach was used with a mailed self-reporting questionnaire as the data collection instrument. A focus group of six distance educators pretested the questionnaire in April 2002. The study sample was instructors at UNI who had been involved in distance teaching using the Internet and interactive television (ITV). A convenience and unstratified sampling method was used to determine the participants. The questionnaire was designed to elicit responses concerning: (a) to what extent the instructors would report implementation of the elements of instructional design, (b) to what extent the instructors had taken advantage of opportunities provided by UNI (or elsewhere) to learn about distance teaching, and (c) what information would be gained that could promote better instruction at a distance at UNI.

A combination of different kinds of scales were used in this study. Open-ended questions were also used to answer the questions in the questionnaire. The quantitative

data were analyzed using statistical analysis procedures with the statistical package SPSS for Windows. A coding system was used to analyze the qualitative data. Chi-square tests were run on several demographic factors to determine if they significantly predicted results related to training for instructors using the Iowa Communication Network (ICN) and WebCT for distance learning, and training to help instructors design instruction using distance learning technologies. Results showed that generally most instructors at UNI could understand and apply the identified instructional design elements when they taught at a distance.

The information from this study provides an understanding of how applying instructional design elements affects the instruction in distance education courses. The data acquired can provide administrators, instructional designers, and instructors in distance education with vital decision-making information for instructional design. Distance education program planners and educators can use this knowledge to improve the quality of distance teaching by making necessary resources and services available to them.

## DEDICATION

To my parents, to my mother in-law, to my husband, who contributed their deepest love, constant encouragement, and significant support during the difficult times in my completion of this dissertation. To my professors, colleagues, and friends who shared their time, knowledge, insights and love with me in the completion of this dissertation.



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## CHAPTER I

### INTRODUCTION

This study explores distance instructors' perceptions and attitudes related to applying key elements of instructional design in distance teaching. Since instructors' perceptions and attitudes may affect teaching behaviors in distance education, this research is proposed to provide information for distance instructors to use to improve their teaching outcomes. The information will also serve as a basis for further research in distance education. In the past, little research has been done related to distance instructors' perceptions and attitudes of if and how they apply the key elements of instructional design in the distance teaching process. Therefore, it is the intent of this study to offer a contribution to this field of study.

#### Background of the Problem

Distance education has grown rapidly in the past decade. Olgren (2000) points out that one of the major changes occurring on the frontline of distance education is the increasing number of distance education programs. He reports that the past decade there has seen "a dramatic increase in the adoption of distance education methods" (p. 20). In the academic year 1994-995, nearly 26,000 distance education courses were delivered in the United States via audio, video, or computer technology, enrolling more than 750,000 students. A total of 690 degree programs and 170 certificate programs were offered exclusively at a distance (Olgren, 2000). According to some estimates, "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" (Griffiths & Gatien as cited



in Olgren, 2000, p. 20). Great progress has been made in distance education offerings in the past decade. Belanger and Jordan (2000) explain why this has happened: (a) distance learning provides new opportunities for students who might otherwise be excluded from participating in the learning process--these learners include individuals with limited mobility due to handicaps or obligations, such as child care or elderly care, or those living and working in remote areas where such education has never been obtainable; (b) distance learning allows institutions to provide education to a larger number of students with relatively fewer instructors, thus establishing a cost-effective method of delivering higher education; (c) learners have the opportunity to pursue lifelong learning after graduation irrespective of lifestyle or location. Because of the above advantages of learning at a distance, the demand for distance education has grown.

Koble and Bunker (1997) did an analysis of articles published in *The American Journal of Distance Education (AJDE)* during a nine-year period from its inception in 1987 to 1995. This analysis laid the foundation for a discussion of the trends in research and practice in the field of distance education. The analysis examined the classification of articles in terms of seven main subject headings including (a) theory, policy, and development; (b) media and delivery systems (effectiveness/evaluation/ methods); (c) institution, staff, and management; (d) student psychology, motivation, and characteristics; (e) faculty participation and instructional process; (f) course design and curriculum development; and (g) student administration and support.

Koble and Bunker adopted a table to summarize the results of their analysis which indicated that 33 articles (26%) were grouped in the category of theory, policy, and

development; 27 articles (21%) were grouped in the category of media and delivery systems (effectiveness/evaluation/ methods); 20 articles (16%) were grouped in the category of institution, staff, and management; 19 articles (15%) were grouped in the category of student psychology, motivation, and characteristics; 14 articles (11%) were grouped in the category of faculty participation and instructional process; (f) course design and curriculum development; and only 13 articles (10.1%) were grouped in the category of course design and curriculum development.

Course design, or instructional design, is one of the most important components in distance education because it is aimed at improving instruction to ensure learning. Teaching at a distance, whether synchronous or asynchronous, requires the instructor to place greater stress on the instructional design process. As Mantyla (2000) argues, “carefully designed course content coupled with excellent presentation is a winning combination” (p. 149). However, instructional designers frequently do not obtain the recognition that they deserve. The number of articles on course design and curriculum development indicate insufficient research or practice in the instructional design field. Hence, further research in this arena is needed.

The role of instructors is very important in teaching at a distance. Willis (1994) stated that to a great degree, “the success of any distance education effort rests squarely on the shoulders of the faculty” (p. vi). In a traditional classroom, instructors’ responsibilities include assembling course content and developing an understanding of student needs. However, when teaching at a distance, according to Willis (1994), the instructor is confronted with special challenges which include:

- developing an understanding of the characteristics and needs of distant students with little first-hand experience and limited, if any, face-to-face contact;
- adjusting teaching style and course content, and considering the needs and expectations of multiple, often diverse, audiences;
- developing a better understanding of delivery technology and staying focused on teaching role;
- working effectively as a skillful facilitator as well as content provider.

Willis here 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, as Koszalka and Bianco (2001) suggest, few research articles describe the instructor's views on the successes and challenges of the different types of design elements incorporated into distance education courses. Thus, additional attention needs to be paid to how distance instructors look at their role as instructional designers and how they apply instructional design elements in distance teaching courses. This researcher believes that there is a strong need to examine how distance instructors understand and apply the instructional design elements in teaching at a distance.

#### Statement of the Problem

Although one role of a distance instructor is to design instruction, it is not known if and how he or she knows, understands, and applies instructional design elements when he or she teaches at a distance. Teaching at a distance is not an easy task. Yet, instructors

will benefit if they understand and apply instructional design elements when teaching at a distance. Thus, it is important to examine the perceptions of their understanding and application of instructional design elements in the distance teaching process. Recent studies show that there has been little research in this field, additional research in this area is needed and has become the focus of this study.

#### Purpose of the Study

This descriptive study will examine the perceptions of those instructors involved in distance education at the University of Northern Iowa, Cedar Falls, concerning if and how they understand and apply instructional design elements when teaching at a distance. The literature review identifies several key instructional design elements in distance teaching practice. Those elements are (a) learner considerations, (b) content organization, (c) instructional strategies, (d) distance education technology characteristics, and (e) evaluation. The perceptions of instructors will be investigated related to these elements.

#### Significance of the Study

Since the design of instruction may directly affect teaching effectiveness in distance education, it is important for distance teaching faculty to understand and apply instructional design elements in the distance teaching process. The information gained from this study will provide an understanding of how the application of instructional design elements affects the design for instruction in distance education. The data acquired from the study will also provide administrators, instructional designers, and instructors involved in distance education with vital decision-making information related

to instructional design to facilitate distance teaching. In addition, distance education program planners and educators can use this knowledge to improve the quality of distance teaching by making necessary resources and services available to distance teachers.

### Statement of Research Questions

The purpose of this study is to explore the perceptions and attitudes of instructors at the University of Northern Iowa (UNI), Cedar Falls about if and how they understand and apply the instructional design elements when teaching at a distance. With this purpose in mind, the researcher generated three research questions as follows:

1. To what extent will the instructors report implementation of identified instructional design elements in distance education courses?
2. To what extent have the instructors taken advantage of opportunities provided by UNI (or elsewhere) to design instruction for distance education?
3. What information will be gained that could promote better instruction at a distance at UNI?

### Limitations of the Study

The following are limitations of the proposed study:

1. The major limitation to this study was a lack of research in similar areas of instructors' perceptions and attitudes in distance education.
2. This study was also affected by the limitations inherent in the voluntary self-reporting method of the survey because surveys are returned voluntarily. The completion

and the return of the survey may be influenced by the respondent's satisfaction with distance education or by the convenience or inconvenience of completing the survey.

3. Only five instructional design elements were explored related to distance instructors' understanding and application of these elements. Generalizations from these five aspects to other aspects regarding distance instructors' understanding and application of instructional design elements in distance teaching may be limited, even under similar conditions.

#### Delimitations

1. All of the participants in this study were instructors at the University of Northern Iowa, Cedar Falls. Thus, generalizations of the findings to other populations or settings may not be appropriate.

2. Selection of participants was limited to those instructors who had been before or were in Summer 2002, engaged in teaching both undergraduate and graduate courses via the Internet and Interactive Television (ITV). Therefore, study findings should not be generalized to undergraduate and graduate courses offered through other distance education approaches or through traditional forms of education.

3. It is possible that researcher expectancy effects may account for any differences that may be found.

4. The credibility of the results was limited to the extent that participants honestly responded to the survey questions. The use of an anonymous survey helped protect respondents and enhance objective reporting. Respondents were assured of anonymity and confidentiality. Individual responses are not to be made public.

### Definition of Terms

For the purpose of this study, the following terms are defined to provide clarity.

Assessment--This refers to a process that people perform in order to gather data to determine how well a student is learning or behaving. At times, assessment data is used to make changes in our teaching approaches. This may be classified as instructional evaluation (Ornstein & Hunkins, 1998). For the purpose of this dissertation, the researcher uses the words assessment and evaluation interchangeably to mean evaluation of instruction to improve teaching approaches.

Attitudes--An attitude usually consists of three components: an affective component, which refers to the individual's feelings about the attitude object; a cognitive component, which is the individual's belief or knowledge about the attitude object; and a behavioral component, which is the individual's tendency to act toward the attitude object in a particular way (Borg & Gall, 1989).

Distance Education/Online Education--Distance education refers to planned learning that normally happens in a different place from teaching. It requires particular techniques of course design techniques, special instructional techniques, special methods of communication by electronic and other technology, and special organizational and administrative arrangements (Moore & Kearsley, 1996).

Evaluation--this refers to a process or cluster of processes that are performed to gather data. The purpose of gathering data is to decide whether to accept, change, or eliminate something--the curriculum in general or an educational textbook in particular (Ornstein & Hunkins, 1998) as stated above, used interchangeably with assessment.

Focus Group--Focus group discussions, or conferences, are usually called focus groups. A typical focus group consists of 8 to 12 people with a group moderator who centers the discussion on a series of topics or issues of interest to the research sponsor. The researcher observes the proceedings and records them for later analysis and interpretation. Focus groups provide qualitative information rather than quantitative data. The results do not generalize reliably to the population as a whole. Consequently, focus group research should be, and typically is, considered exploratory and preliminary rather than conclusive (Alreck & Settle, 1995).

Instructional Television also called Interactive Television (ITV)--This term refers to television used for direct classroom instruction, both live and videotaped. It is highly visualized and interactive. A student handout should be provided for each telelesson (Cyr & Conway, 1997).

Interactive Television--This refers to the interaction between instructor and students via one-way or two-way television with two-way audio that allows direct interactions to happen similar to a traditional classroom setting (Baker, 1990).

ICN--This is the Iowa Communications Network, a fiber optic state-owned network that transmits two-way audio, video, and data (Herring & Smaldino, 1998).

Internet--This is a network of networks that links computers across the world to one gigantic global communications system that allows all the computers on the Internet to share and exchange data. In computerspeak, the Internet refers to a wide area network (WAN) consisting of many local area networks (LANs). A LAN is two or more



computers connected together. Each can communicate and share information with the other. A WAN, therefore, is a network of networks (Ryder & Hughes, 1997).

Perceptions--These are the immediate experiences observed by individuals or groups at a particular moment and using existing and relevant data (Cook & Campbell, 1979).

Survey--A research technique where information requirements are specified, a population is identified, a sample selected and systematically questioned, and the results analyzed and generalized to the population, and reported to satisfy the information needs (Alreck & Settle, 1995).

World Wide Web (WWW)--It is a huge global network of connected computer sites that direct the user to text, graphics, sound, and video information. A unique element of the Web is the navigational process of hypertext which allows the user to simply click on text that leads the user to various global sites (Ryder & Hughes, 1997).

### Summary

Little research has been conducted on exploring distance instructors' perceptions and attitudes related to applying the key elements of instructional design on distance teaching. Previous studies in distance education have centered on "cognitive achievement, student demographics, attrition, student satisfaction, costs, and technical qualities of instruction" (Rueschman, 1998, p. 14). Because understanding and applying instructional design elements will help instructors who teach at a distance, the intent of this study is to investigate perceptions from the distance instructors at UNI, in Cedar Falls, Iowa, about if and how they understand and apply the key instructional design

elements in the distance teaching process. The study will allow some conclusions to be made and some suppositions to be reached regarding the present and future value of instructor application of key elements of instructional design in distance education. This study will identify problems regarding the instructional design elements investigated and will make some recommendations concerning possible and valuable future uses and improvements for instructional design in distance education.

## CHAPTER II

### LITERATURE REVIEW

#### Introduction

Little research has been found that addresses instructors' perceptions of the application of instructional design elements in the distance teaching process. As stated in Chapter I, the purpose of this research is to investigate these perceptions. This chapter presents a review of the literature related to the topic to develop a theoretical framework for this study.

The review of the literature is divided into three sections. The first section addresses general distance education issues; the second section covers general instructional design issues; the third section discusses designing instruction. These subtopics all contribute to the process of researching how instructors who teach at a distance apply instructional design elements in the distance teaching process. It is the intention of the researcher to address these issues in the study regarding instructors' related perceptions and attitudes.

#### Brief History of Distance Education

Distance education has developed over the past 175 years (Keegan, 1996). As early as 1828, regular mail service was employed to help with traditional education and was called correspondence education. However, this model did not spread widely for a great many years. Correspondence education has been used to deliver education chiefly through mailing print forms of class lectures and assignments to place-bound individuals

or nontraditional students. The earliest distance tutoring courses taught shorthand and started in England in 1840.

Since World War I, distance education has developed rapidly internationally. William Rainey Harper, the father of modern correspondence education, established the first department of correspondence education at the University of Chicago (Schrum & Luetkehans, 1997). Newspapers, radio, television, telephones, satellite transmission, electronic publishing, and computer-mediated communication have been gradually integrated into distance education courses. The British Broadcasting Corporation (BBC) employed radio to deliver non-credit or non-degree courses to adults with the purpose of improving individual lives. For decades, Australia has provided its Radio School of the Air program to school-aged children who lived in remote areas. In the U.S. schools at all levels offered credit and self-enrichment courses through radio. Television opened up new dimensions for distance education.

Most education at a distance did not become part of traditional educational institutions--either four-year universities or community colleges--until the 1960s (Schrum & Luetkehans, 1997). In 1971, the University of the Air in the United Kingdom started offering courses that applied to specific programs or degrees.

Distance education has developed rapidly in the past 30 years (Keegan, 1996). Great changes have taken place in the quality, quantity, status, and influence of distance education. Today, institutions all over the world are implementing distance education programs and are doing research on its role as a complement to traditional education. *Linking for Learning: A New Course for Education*, published by the Office of

Technology Assessment (OTA) in 1989, provided some evidence for this phenomenon: in the United States, virtually all states were involved in some form of distance education; in China, almost 50% of post-secondary students use distance learning; in the former Soviet Union, 30%; and in former East Germany, 25% (as cited in Schrum & Luetkehans, 1997).

Millions of learners have experienced learning at a distance. Large numbers of students in higher education are distance learners because distance education provides them with opportunities to learn directly at their homes and offices. These students have participated in higher education because instruction can be delivered through technology in a timely and more interactive way. It is true that distance education is moving toward an age when its particular features (speed, interactivity, multiple locations, and a variety of communication techniques) enable teachers and learners to interact over a distance in almost conventional ways (Schrum & Luetkehans, 1997).

#### General Distance Education

Distance education has been defined in several ways. Keegan (1996) synthesized a number of similar definitions in 1980, describing six basic elements of distance education. First, the separation of teacher and learner, which is central to nearly all of the definitions, distinguishes distance education from conventional, oral, group-based education. Second, the role of the educational organization distinguishes distance education from private study. Third, distance education takes the place of interpersonal communication with some form of electronic communication: print, telephone, teleconference, audio, video, broadcasting, or computer. Fourth, two-way communication

is provided so that learners can initiate dialogue. Fifth, the possibility of occasional seminars is another characteristic of distance education. Sixth, the concept of the industrialization of teaching and learning proves to be a radical separation of distance education from other forms of teaching in the educational setting. These six elements described the nature of distance education and made a clear distinction between distance education and traditional education approaches.

### Three Different Structures of Distance Education

Keegan (1996) identified three different structures regarding the analysis of distance education: (a) conventional; (b) teaching at distance, and (c) teaching face-to-face at a distance. The conventional structure is characterized by traditional education provided in schools, colleges, and universities today. Its main elements include dialogue, lecture, tutorial and seminar, laboratory practice, field trips, and periods of study in the library or resource center. Often, the major technologies used in the traditional classroom are the overhead projector and the white (or black) board. In the traditional classroom, the students travel to the institution to learn. Teaching at a distance refers to learning with the separation of teacher and learner and of the learner from the learning group. This form of education is offered today by correspondence schools, open universities, and distance (or external) departments of conventional colleges and universities. An electronics revolution in the 1980s generated the third kind of structure--teaching face-to-face at a distance. Virtual or electronic classrooms are now operated by satellite, by compressed video technology, or connected by full bandwidth links, achieving teaching face to face at a distance. The instructor can see and hear the students present at the main

site plus all of the other students at other locations hundreds or thousands of miles away. The students at all sites can see and hear the instructor and all other students in the course. The face-to-face interaction in education is established electronically. Distance learners can choose from these different structures to find the appropriate educational opportunities for continuing their learning.

#### Distance Teaching and Distance Learning

Keegan (1996) stated that distance education consists of two parts: distance teaching and distance learning. Distance teaching indicates the process of course development to prepare learning materials for students. As Belanger and Jordan (2000) pointed out, distance teaching relates to delivering education or training material “while not being physically present at the same location as the students” (p. 9). The latter refers to the process of learning from the student’s perspective (Keegan, 1996). Therefore, distance teaching, perceived from the instructors’ perspective, and distance learning, as seen from the learners’ perspective, are two different processes in distance education.

Belanger and Jordan (2000) demonstrated several reasons for growth in distance learning. First, distance learning has created new opportunities for students who may be unable to participate in the conventional learning process. These potential students may have limited mobility due to handicaps, obligations such as childcare or elderly care, or living and working in remote areas where such continued education is unavailable. Second, institutions are able to teach a greater number of students with fewer instructors through distance learning. This offers a cost-effective way to promote higher education. Third, lifelong learning is provided to learners after graduation despite lifestyle or

location. Because of these advantages many higher educational institutions have implemented some distance learning programs to enhance societal literacy through a greater access to education.

### General Instructional Design

#### A General View on Instructional Systems

Dijkstra and Merrienboer (1997) proposed a general view of instructional systems by suggesting that the main problems instructional designers face are: (a) selecting and ordering problems, or cases, on which to base learning and instruction, (b) constructing learning opportunities or learning environments from these problems or cases, and (c) diagnosing learners. They indicated that learning is, or learners are, the focus of instructional systems because each class of problems is related to learning or learners. Thus, this general view actually reveals the nature of a learner-centered approach to the instructional process.

#### Instructional Design and Instructional Systems Design

The term instructional design refers to “the systematic and reflective process of translating principles of learning and instruction into plans for instructional materials, activities, information resources, and evaluation” (Smith & Ragan, 1999, p. 2). Therefore, it is a process of applying instructional principles to plan or design instructional materials, learning activities, and assessment techniques using various information resources to achieve related instructional goals.



Tennyson and Schott (1997) stated:

Instruction design is a field of study concerned with improving student learning. As a field of study, it provides a theoretical foundation to principles of instructional design, a research base confirming the theoretical foundations, and a direct involvement in the application of those principles. Instructional design practice on the other hand provides methods and techniques for developing and producing learning environments based on the instructional design theory. (p. 1)

Tennyson and Schott (1997) specifically explained that instructional design, as a field, is directed toward improving student learning. They addressed the application of principles to be used as a theoretical base upon which to generate methods and techniques for creating a learning environment.

Instructional design is different from instructional systems design (ISD). The systematic design of instruction, from an initial analysis of needs to the evaluation of effectiveness, is known as instructional systems design (Dijkstra & Merrienboer, 1997). Instructional design is only a part of instructional systems design and includes constructing learning objectives (embracing the analysis of tasks or domains), identifying problems or cases which the instruction requires, choosing instructional strategies, and creating a learning environment and related instructional materials. However, ISD also includes many activities that go along with the selecting of instructional strategies like cost-benefit analysis, target group analysis, implementation, evaluation and maintenance.

#### The Rationale for Instructional Design

Instructional design is a highly valuable activity associated with instruction and learning. Without this activity, instruction and learning cannot take place effectively.

Piskurich (2000) explained the importance of instructional design:

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

### Instructional Design: Process and Product

In a distinct explanation of the relationship between process and product in terms of instructional design, Dijkstra (1997) asserted 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 that generates a product in an educational setting. Thus, instructional designers have to be concerned both with the process and product aspects of instructional design.

### Key Elements of the Instructional Design Process

Instructional design, or development models, are useful in the instructional design process. Several models can be used to design the instruction of course units and lessons. In 1990, Dick and Carey developed one of the most widely used models (Gustafson & Branch, 1997). This model involved nine stages: (a) identifying an instructional goal, (b) conducting a goal analysis or instructional analysis, (c) identifying entry behaviors and characteristics of learners, (d) writing performance objectives, (e) developing criterion-referenced (objective-referenced) test items, (f) developing an instructional strategy, (g)

developing and selecting instructional package materials, (h) designing and conducting formative evaluations, and (i) designing and conducting summative evaluations. This model is valuable because it introduces the concepts and applications of the systematic instruction design of instruction to people who are new to the field.

Kemp, Morrison, and Ross (1994) identified nine elements that should receive attention in a comprehensive instructional development plan: (a) identifying instructional problems and specifying goals for designing an instructional program, (b) examining learner characteristics during the planning stage, (c) identifying subject content and analyzing task components related to the stated goals and purposes, (d) stating instructional objectives for the learner, (e) sequencing content within each instructional unit for logical learning, (f) designing instructional strategies so that each learner can master the objectives, (g) planning instructional delivery within three patterns for teaching and learning, (h) developing evaluation instruments to assess objectives, and (i) selecting resources to support instruction and learning activities. Gustafson and Branch (1997) asserted that this model emphasized subject matter content, goals and purposes, and selection of resources

Smith and Ragan (1993) created an instructional design process model which 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” (as cited in Gustafson & Branch, 1997, p. 68). Smith and Ragan’s approach includes eight steps: (a) analyzing the learning context, (b) analyzing the learners, (c) analyzing the learning task, (d) assessing learner performance, (e) developing

instructional strategies, (f) producing instruction, (g) conducting evaluation, and (h) revising instruction. This model was used to introduce the philosophy and theory of the systematic design of instruction to practitioners in educational fields (Gustafson & Branch, 1997).

Though the models presented above emphasized different aspects of the instructional design process, they all share four key similarities: (a) learner considerations, (b) content organization, (c) instructional strategies, and (d) evaluation (see Figure 1). Therefore, these four elements are key elements in the instructional design process.

#### Designing Instruction at a Distance

The most critical aspect of successful distance education is good planning because planning for effective teaching is necessary for learning to occur (Smaldino, 1999). Therefore, it is essential for instructors to consider key instructional design elements when designing instruction at a distance.

#### Key Elements for Teaching at a Distance

Teaching at a distance requires greater emphasis on the initial planning phase (Simonson, Smaldino, Albright, & Zvacek, 2000). For successful planning, distance learning faculty should attend to some key design issues. According to Simonson et al. (2000) the following issues need to be considered:

Figure 1. Key elements of the instructional design process.

Instructional Design Elements	Dick and Carey	Kemp, Morrison and Ross	Smith and Ragan
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

1. Who are the learners?

Instructors need to have *knowledge of general learner characteristics*. This knowledge about the learners can help instructors successfully handle the physical separation of instructor and students in the class.

## 2. What is the essential content?

The content of a course should reflect its relationship to the rest of the curriculum. Instructors need to consider the nature of the content, and the sequence of information. Generally, the scope of the course content should 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 important that distance educators decide which strategy or strategies to use to make sure learners participate. Instructors need to think about selecting those instructional strategies that enable all learners to participate in active learning. Doing so can ensure that students will get along in the class.

## 4. What is the learning environment?

To completely understand distance education, instructors must examine not only the technology, but the learning environments that are created (Herring & Smaldino, 1998). Learning environments as a class of systems integrate the tools, resources, and pedagogical features that enhance student comprehension (Hannafin, 1992).

## 5. How do you determine the quality of the instruction?

When teaching at a distance, instructors need to address general learner characteristics, the nature of the content, the teaching strategies and media selected, the learning environment, and evaluation.

Moore and Kearsley (1996) stated that many questions should be examined 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 which are all related to meeting needs of learners.

Sherry and Morse (1995) argued that teachers should take an interest in specific areas of the instructional system design process, such as (a) determining how much content to put into a single lesson, (b) diversifying types of presentations and course activities, (c) designing ancillary materials, (d) developing courseware, (e) assessing teacher effectiveness and student learning, and (f) revising learning modules to fit students' needs. Sherry and Morse emphasized the issues including content, instructional strategies, the development of materials, the use of media, and assessment. These issues need to be considered to address learner needs as well.

When discussing issues related to instructional design in distance education, the cited authors all addressed the issues associated with (a) learner considerations, (b) content organization, (c) instructional strategies, (d) distance education technology

characteristics, and (e) evaluation. Therefore, these can be considered key elements for designing instruction at a distance.

### Learner Considerations

It is important to consider learners' 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 in at least two aspects: (a) system processes must be designed to meet learners' needs and consider their learning characteristics; and (b) learners' thoughts and actions within the system will produce an influence, "since any action in one part of the system cannot help influencing (in at least a small way) the other parts" (Chute et al., 1999, p. 66). Following are some of the most important components of addressing learners' needs in distance education.

General learner characteristics. Simonson et al. (2000) claim that each learner is unique and has unique characteristics that need to be identified. Those characteristics can impact the distance learning outcomes. They include attitudes or interests, prior skills, knowledge, experience, and learning styles.

1. Attitudes or interests. Knowing why a student is in a distance education program and what outcomes she or he expects can provide useful information to support that student (Granger & Benke, 1998). According to Simonson et al. (2000), the majority of studies showed that distance learners were highly motivated. Their reasons for participating in a distance learning program differed from convenience for the



nontraditional-aged student to class accessibility and the coursework offered. Frequently, distance education learners chose a distance education classroom because they wanted to guarantee the continuation of their education.

2. Prior skills. Granger and Benke (1998) asserted that academic skills embraced critical reading, writing, and quantitative skills, but skills in time management, information retrieval, and study habits were equally important for the distance learners.

3. Knowledge. An instructor needs to match the knowledge goals of the program with the knowledge of the prospective students to build on what students actually know (Granger & Benke, 1998). Martens and Hermans (2000) found it crucial to let students realize their prior knowledge, which might result in “better-underpinned decisions about study plans” (p. 246). A lack of prior knowledge or even misconceptions could greatly hinder the learning process. Taylor (1998) found that self-assessment tools in distance learning contexts helped assessing students’ prior knowledge. Martens and Hermans’ (2000) study supported Taylor’s findings. In some cases, assessment pretests were useful for the student and the provider institutions.

4. Experience. Adult distance learners commonly have significant practice experience in a narrow aspect of a field. Thus, it is important to design a program to include these background differences (Granger & Benke, 1998). Simonson et al. (2000) pointed out that if students felt satisfied with the quality of their learning experience, the convenience of distance education enhanced their participation. Frequently students, who experienced a distance learning situation for the first time, felt uncomfortable with the learning situation. An effective educator could use technological tools in a user-friendly

manner so as to ease these fears and encourage students to take advantage of a unique and dynamic learning experience. It was also assumed that students needed to take responsibility to grow and adapt personal learning characteristics to distance learning situations (Simonson et al.).

5. Learning styles. In the past 20 years, educational research on individual differences and learning styles has increased (Gibson, 1998). Smith (1986) defined learning styles as “people’s characteristic way of information processing, feeling and behaving in and toward learning situations” (p. 24). Instructors need to understand the learning styles of class members to apply educational tools to promote optimal learning. For example, instructors can provide more visual cues such as graphics, pictures, diagrams, or charts to satisfy the visual learner’s needs in a distance class; auditory learners can be provided with more explanations or discussions; kinesthetic learners can be aided with appropriate hands-on activities such as role-playing or dramatized dialogues.

Gibson (1998) pointed out that distance instructors generally needed to use a variety of teaching strategies to fit many learning style preferences. Such strategies include group work, lecture, discussions, or role playing through a variety of media. In general, when trying to adapt a variety of learning styles in the instructional design, “It is always best to design alternative activities to reach the same objective and give the students the option of selecting from these alternative activities those which best meet their preferred learning style” (p. 49).

Thompson (1998) proposed that the distance learner is: (a) older than the typical undergraduate, (b) female, (c) likely to be employed full time, and (d) married. Distance education instructors can use this information to study the correlation between particular learner characteristics and learner success in distance education programs.

Interactivity. Interactivity is crucial to learning in distance education. As Belanger and Jordan (2000) stated, instructors and participants should facilitate all types of interactions in distance learning courses to reduce the sense of isolation among individual participants and help them adjust to a new environment. Interactions will also help include the individual characteristic learners bring to the class, such as ethnicity, broader age range, or greater expertise. Moore and Kearsley (1996) proposed three types of interactions for distance teachers. They are: (a) learner-content interaction, (b) learner-instructor interaction, and (c) learner-learner interaction. Learner-content interactions refers to students working with the subject matter presented in the class. Learners have to obtain knowledge by personally modifying information to fit their own cognitive structures. As learners interact with the course content, they may change their understanding or perspective and construct new knowledge. Learner-instructor interaction is communication between the instructor and students and reinforced by face-to-face talk, phone conversations, or e-mail. The third kind of interaction is learner-learner interaction between one learner and other learners, alone or in group settings, with or without the presence of an instructor. Learner-learner interactions are essential in distance education because of the circumstances related to learners' ages, experience, and level of learner autonomy. Learner-learner interactions can be an extremely valuable,

essential resource; individual learner interactions can be enhanced through peer group interactions by asynchronous e-mail and synchronous computer talking (Moore, 2000/2001).

When distance instructors address learner considerations, they need to consider the previous three kinds of interactions. They need to design and organize courses to include each type of interaction and provide the interactions that are most appropriate for the teaching tasks in different subjects for learners at different stages of growth. However, many distance education programs commit to one particular communications medium. When only one medium is used, probably only one kind of interaction is facilitated. Distance instructors need to think about using all three kinds of interactions in a variety of media (Moore & Kearsley, 1996).

How faculty support distance learners and meet their needs. Instructors teaching at a distance need to provide frequent and adequate feedback to support all learners (Gibson, 1998). Students' needs and limitations should be addressed in every aspect of the distance education program. Strong student support will result in success in every aspect of the program (Granger & Benke, 1998). Distance students will find programs are supportive because faculty and staff designed the program to consider student needs and expectations (Granger & Benke).

Faculty can support distance learners by connecting the academic program with students' academic and support services. Because distance learners need knowledge of assignments in advance, as well as structure, and prompt feedback, faculty should be prepared to provide those elements effectively in distance instruction. The instructors

also need to incorporate learners' experiences, goals and expectations into the learning activities. Faculty who assess expectations and skills of distance learners can use administrative and support services to assist students in the learning processes (Granger & Benke, 1998).

Rowntree (1992) stated that distance learners probably need more individualized personal support than general support (as cited in Reid, 1995). Dekkers and Cuskelly (1990) stressed that distance learners are not generally isolated by choice. Open learning centers can play an important role in facilitating interaction with staff and students instead of an institution taking minor responsibility for students' involvement. The authors identified four important areas associated with student perspectives: (a) access to academic support and other students--preferably by direct contact; (b) adaptation to a variety of student learning styles instead of merely by presenting study packages; (c) access to library and other learning resources, particularly for independent study materials; (d) understanding of students' learning environments and backgrounds, especially students' family and work commitments (as cited in Reid, 1995). These statements have indicated a need for student support in those focus areas. Understanding and implementing the supports necessary to help distance learners will bring many challenges.

How faculty help students get comfortable with distance learning. When implementing distance learning, it is important to help students to use the support system (Chute et al., 1999). Distance students need to feel comfortable with distance learning.

Distant instructors can help distance learners adapt to a distance learning system by providing channels for interaction, access to resources, and help with technology.

Students as factors of design product. Distance learner satisfaction is key to the success of distance education. Thus, distance instructors need to consider student satisfaction factors when designing instruction at a distance.

Content is one of elements that needs to be considered in the instructional design of distance education (Smaldino, 1999). One of the basic instructional design principles is to plan the content around the needs of the audience and to engage the learners (Fisher, 2000/2001). Distance learning instructors need to choose effective teaching strategies to deliver instructional content to achieve the ideal learning outcomes. Kelsey (2000) noted certain barriers existed in developing successful course organization especially in interactive compressed video classes. Barriers include students' reluctance to publicly ask questions before the larger learning community and the class 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 to the unique distance teaching environment to enhance teaching quality.

The students' perceptions of interaction are 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 emphasized

that a crucial indicator of distance student satisfaction was their perception of overall interactions. A survey conducted by Sorensen and Baylen (2000) showed two problems concerning interaction: teacher-student and student-student interaction. The findings suggested that instructors needed to be more involved in the across-site activities to increase interactions with the students. Instructors also needed 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 technology, identified some of the student perceived barriers to interaction in an interactive course. One barrier 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 could not see themselves and felt more comfortable asking questions. Students at the original site indicated that camera shyness was a more serious issue for them than for students at remote sites because their larger-than-life-size images were displayed on a screen in the front of the room.

One characteristic of distance learning is its association with high dropout rates in comparison to conventional institutions. Clearly, there will always be some dropouts. As distance learning opportunities grow, so competition mounts. When students have a choice, they will judge institutions by the quality of the design they produce. Therefore, in order to retain students, it is essential to investigate students' perceptions of the designed instructional product. Lockwood (1995) conducted a qualitative study by collecting data through interviews, questionnaires and self-recorded audio-tapes to

explore students' perceptions and responses to assessment material. His analysis identified three common features that students regarded as benefits to their study. They were course-focused, self-focused, and assignment-focused benefits. Course-focused benefits regarded students' learning from the course--the concepts, ideas, arguments under discussion. These activities helped students to understand the course material. Self-focused benefits are those related to a student's learning and development as a 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 was to encourage students to think critically, or question the materials. Assignment-focused benefits were associated with directly answering an assignment, having an opportunity to think about the issues to be discussed or the materials to be used. These perceived benefits indicated that if the learning activities helped students understand the course material, think critically, or answer questions regarding assignments, students would consider the course as a good one. Otherwise, they felt unsatisfied with the quality of the course or the product of the instructor's design. Lockwood's findings are significant because they have provided important implications about the aspects in which distance instructors need to examine and evaluate for their course product.

Students' perceptions of the use of the Internet and ITV in learning the content were very important for identifying and solving related problems or issues. 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 was that students enjoyed the flexibility and convenience of attending an online course. Other findings suggested that students also valued the professor's patience and understanding in dealing with course 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. These student perceptions of an online course provided some valuable insights into how the involved parties can improve future online courses.

Thomerson and Smith (1996) investigated student perceptions of the affective experiences encountered in distance learning courses in using ITV. They found some areas needed to be improved in the distance program at Valdosta State University. They indicated that many remote-site students found it difficult to hear at off-campus sites. Both the remote- and origination-site groups suggested that the distance learning equipment led to many distractions. Down time during class due to an equipment failure was the biggest problem. Other distance learning students complained that making equipment adjustments to get all sites on line together led to the loss of some class time. Origination-site students did not understand these problems. Many origination-site students were impatient with these problems that seemed unrelated to their learning. Findings from this study have shown that instructors need to develop appropriate strategies to improve the affective aspects of students' learning experiences for remote- and origination-site students. Strategies for improving the origination-site experience are

essential because origination-site students were not willing to take a distance learning class. One possible suggestion is not to include the origination-site group so that the instructor could concentrate on teaching students at the remote sites. Origination-site students could attend traditional classroom courses without the distractions caused by the distance learning experience (Thomerson & Smith, 1996).

The above studies show factors and student needs perceived as important that instructors should address when designing instruction at a distance. Addressing these issues will improve the quality of teaching at a distance.

#### The Design for Content Organization in Distance Education Courses

Content organization is central to achieving learning objectives because how content is organized may directly affect learning outcomes. In a distance education setting, content organization seems even more important. As Willis (2000/2001) explained, classroom instructors depend on a number of “subtle visual cues from their students to enhance their delivery of instructional content” (p. 197). It is easy for instructors to distinguish those students who are carefully taking notes, thinking about a difficult concept, or prepared to comment from those students who are frustrated, confused and tired. The thoughtful teacher consciously, and subconsciously, observes and analyzes these visual cues and adjusts the content delivery to meet the needs of the students. The distance teacher, however, may have 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).

Chute et al. (1999) defined the course content in distance education as follows:

“Content is a main focus or object of both the learner’s and instructor’s activity, and on a superficial level distance learning systems may seem to exist for no reason other than to bring learners and content together” (p. 66). This statement underlines the importance of the course content in distance education. Gibson (1998) believed that all distance learners needed: (a) content that meets their needs; (b) obvious directions for their actions at each phase of the course; (c) as much control of the pace of learning as possible; (d) a means of drawing attention to individual concerns; (e) a method of investigating their progress and acquiring feedback from their instructors; and (f) materials that are useful, active, and interesting. Gibson stressed the importance of taking learners’ needs into account when discussing course content in distance education.

#### Instructional Strategies

Distance education provides an opportunity for instructors to revisit teaching techniques that incorporate shifts in both place and time (Herring & Smaldino, 1998). A place shift indicates that all class 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). Even so, 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 encountering great challenges, it is still possible that distance learning instructors will succeed if they overcome the related obstacles by selecting appropriate instructional strategies.

Willis (2000/2001) claimed that “for the most part, effective distance teaching requires the enhancement of existing skills, rather than developing new abilities” (p.

199). According to him, special attention needs to be paid to the following:

- Realistically assess the quantity of content that should be effectively delivered in the course. Owing to the logistics, delivering information in a distance course often takes more time than presenting the same amount of information in a traditional classroom setting.
- Realize that learners have different learning styles. Some learn better in group settings; others do fine working independently.
- 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 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’ responses.
- 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.
- Finally...relax and participants will quickly become comfortable with the process of distance education and effective teaching will resume.

These skills can facilitate effective distance teaching. However, engaging the learner is the key in determining which strategy or strategies to use (Smaldino, 1999). Methods that focus on the learners and incorporate interactivity have been shown to be most successful. The instructors need to consider using several techniques in order to involve learners in active learning experiences (Simonson et al., 2000).

### Major Issues to Address Regarding Using the Internet and ITV for Teaching Content

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 for teaching at a distance. However, instructors frequently come across problems that prohibit using these two technologies smoothly. Therefore, it is necessary to investigate issues and concerns regarding the distance instructor is use of the Internet and ITV for teaching content.

Wang-Chavez and Branon (2001) investigated instructors' perspectives on World Wide Web (WWW)/Internet-based instruction. They observed visible interactions occurring on one course web site. Through an analysis of the evaluation data, they identified three major difficulties with the instructor's 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 student interaction was that most of the students had never taken an online class. They did not know how to communicate using the related courseware. The instructor did realize this lack of student involvement in the class. Even so, he did not have more time to promote the students' online communication due to a heavy teaching work. The second major difficulty concerned the quantity of feedback students received from the instructor. The same reason (time shortage) restricted the amount of individual student feedback from the instructor. The professor hoped that students would interact more with each other and learn from each other instead of depending on him for feedback. The third major problem referred to class standards. Students stated that they were not clear about how the instructor was

evaluating them. This was especially true with the participation part of their grade. They suggested that clear and specific guidelines about how participation was evaluated (for example, by number of message board postings, depth of the posts, etc.) would help clarify students' confusion. Similarly, students also needed clear guidelines for group projects to address their concerns about evaluating group work. This would have resulted in more participation from group members.

Gehlauf, Shatz, and Frye (1995) investigated faculty perceptions of interactive television instructional strategies. The results revealed that instructors believed that there was a strong need for a training program for faculty teaching interactive television courses. When asked "What needs to be included in a training program for faculty?" participants offered 29 responses. Their major concern regarded technical issues, like familiarity and practice with the equipment. Moreover, the instructors expressed a need to address pedagogical issues such as more hands-on or role playing activities to enhance interaction with students. The participants also conveyed a need for training to develop effective audio-visual materials and to handle system issues such as dealing with technicians and remote site coordinators. Gehlauf et al. (1995) found that comparing instructors' teaching behaviors in the interactive television courses with their ideas about effective teaching practices revealed clear inconsistencies. Instructors tended to use more traditional approaches (e.g., lecture, overhead notes, and group discussion) even if they believed audio-visual methods (e.g., videotapes and slides) were more effective. Instructors showed that traditional instructional methods were not effective in the

interactive television classroom, although they tended to continue to use traditional methods.

Moore and Koble (1995) offered some implications for training faculty who used interactive television. The need to train faculty before they taught an interactive television course was obvious. Although instructors identified traditional instructional methods as ineffective in the televised courses, they kept using those methods.

Furthermore, the instructors suggested that instructional methods that integrated more audio-visual materials were effective in the interactive television classroom, but they failed to use such materials. Future research is needed to prove that the same instructional methods students identified as effective are also identified by the instructors.

A much stronger case can be established to combine audio-visual materials, and to train instructors in 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 concerned the instructors' perceived need for hands-on training. Moore and Koble found that instructors did not like to be told how to teach. Instead, they prefer to get a feel for the equipment and the effective techniques they needed to use in interactive television classrooms. Finally, the authors found the need for good system support. This included properly trained technicians, remote-site coordinators or facilitators, technical troubleshooting personnel, and student orientations to the system prior to the class.

The issues and concerns Moore and Koble (1995) discussed are critical for distance instructors to consider. These issues and concerns generally include: (a)

students' lack of interaction with each other because they were inexperienced in taking an online class or did not know how to use the related courseware; (b) students receiving insufficient feedback from the instructor who is too busy with coursework; (c) students who are unaware of appropriate standards for their coursework evaluation; (d) instructors' need for training students to use equipment, for training themselves to develop effective audio-visual materials and to handle system issues such as working with technicians and remote site coordinators; and (e) the need for good system support. To develop and implement successful distance education courses, these considerations need to be addressed.

#### Evaluation of the Design Product

Evaluation is an important procedure in the instructional design process in distance education. Conducting evaluations as a continuous process offers many benefits. Belanger and Jordan (2000) suggested 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 three benefits indicated the three chief purposes of conducting an evaluation in an educational program. They can be considered the starting-point for thinking about evaluation of an educational program.

How to monitor and evaluate the quality of instructional design. Chute et al. (1999) confirmed that evaluation is an important part of the design of distance learning systems and programs. They continued to state that the most direct measure of program



effectiveness should center on the quality of the individual learning experience. They proposed three assessment factors: (a) the amount learned, (b) the integration of learned skills with practice, and (c) self-reported satisfaction with the learning experience. First, distance 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 for assessing students' learning 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 distance instructors need to think about integrating learned skills into practice. Training and formal education are both intended to promote 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 a transference. The workplace setting can provide opportunities for a more direct assessment of learning outcomes. Third, distance 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 to determine whether students are willing to continue attending distance education courses.

Designing assessment tasks. Designing assessment tasks is a crucial activity in the earliest stages of subject design and development and distance instructors can follow some ways to start to design assessment tasks (Morgan & O'Reilly, 1999). These approaches include aligning assessment with the objectives, and selecting appropriate

assessment tools to ensure that the assessment process is possible in a distance learning environment. Morgan and O'Reilly indicated that when distance instructors design assessment tasks, they need to consider if the assessment is clearly aligned with subject aims and objectives. Aligning content, teaching, and learning activities with assessment tasks is more likely to bring about a deep approach to learning. In addition, instructors need to consider knowledge, skills and attitudes that learners develop through assessment and to seek diverse methods that enhance the broadest range of vocational and disciplinary skills. Instructors also need to choose methods that are appropriate to the desired outcomes and to think creatively about perceived difficulties.

#### Summary

Instructors need to address key elements for designing instruction at a distance. They are (a) learner considerations, (b) content organization, (c) instructional strategies, (d) distance education technology characteristics, and (e) evaluation. Doing so could help distance education instructors design instruction effectively. In the past, little research has been done related to distance instructors' perceptions and attitudes of if and how they apply the key elements of instructional design in the distance teaching process. Therefore, this study is intended to fill the gap in the literature.

## CHAPTER III

### METHODOLOGY

#### Introduction

This chapter is intended to present a complete review of the research design the researcher created and implemented for this study. The study was focused specifically on the existing perceptions of UNI instructors on their understanding and application of instructional design elements in the distance teaching process. The subtopics and subheadings to be discussed in this chapter include seven parts. They are: (a) restatement of the problem, (b) the survey methodology employed, (c) population and sample, (d) instruments, (e) data collection procedures, (f) data analysis, and (g) results.

#### Restatement of the Problem

The overall purpose of this study was to examine the perceptions and attitudes of instructors at UNI, Cedar Falls, Iowa, on if and how they understood and applied the identified instructional design elements when teaching at a distance. Through the literature review, several key instructional design elements in distance teaching practice were identified. Those elements were (a) learner considerations, (b) content organization, (c) instructional strategies, (d) distance education technology characteristics and (e) evaluation. The instructors' perceptions were explored as they related to these elements. The research questions generated were as follows:

1. To what extent will the instructors report implementation of identified instructional design elements in distance education courses?

2. To what extent have the instructors taken advantage of opportunities provided by UNI (or elsewhere) to design instruction for distance education?

3. What information will be gained that could promote better instruction at a distance at UNI?

### Survey Methodology

In this study, the researcher attempted to investigate the perceptions of instructors at the University of Northern Iowa, Cedar Falls, Iowa on if and how they understand and apply the identified instructional design elements when teaching at a distance. This study used a descriptive study approach. The approach was designed to describe a set of conditions, characteristics, or attributes of people in a population based on measurement of a sample (Alreck & Settle, 1995). The survey was a descriptive study in which data are gathered from the members of a sample to estimate one or more population parameters (Jaeger, 1997). Survey research is an easier, quicker, less expensive, or more precise way to get the needed information (Alreck & Settle, 1995). Alreck and Settle, referring to individuals or organizations that sponsor surveys, offered that “they want to understand or predict human behavior or conditions” as it is the center of their academic or professional work ( p. 3). Here, Alreck and Settle emphasized the benefits of conducting a survey research. Because of such advantages, the researcher has decided to conduct a survey research in this study.

“When data are collected through a mail survey, the instrument that contains the survey questions is called a questionnaire” (Jaeger, 1997, p. 451). Questionnaires can be used in survey research “to determine opinions, attitudes, preferences, and perceptions of

persons of interest to the researcher” (Borg & Gall, 1979, p. 27). A mailed self-completion questionnaire was used as the data collection instrument to answer the research questions. Validity was determined by pretesting the questionnaire before distributing it to the respondents.

The researcher used a selected panel of distance educators as a focus group to test the research instrument to achieve the validation of the research instrument. The questionnaire was designed to explore the instructors’ perceptions of whether and how they understood and applied the instructional design elements in the distance teaching process. The research questions were used as the framework to develop the survey questions. This survey provided instructors with the opportunities to reveal their opinions on the research topic. In the survey, three areas were explored concerning instructors’ perceptions of their understanding and application of instructional design elements in the distance teaching process. These three areas were: (a) how instructors report implementation of identified instructional design elements in distance education courses, (b) how instructors have taken advantage of opportunities provided by UNI (or elsewhere) to design instruction for distance education, and (c) how instructors could promote better instruction at a distance at UNI.

The questionnaire used for this study was created from the initial survey which was conducted in April, 2002. Some revisions were made in the initial questionnaire based on the suggestions and recommendations from the focus group. The revised questionnaire was used in this study. The sample for this study was drawn from UNI instructors who had been before or were involved in distance teaching via the Internet

and ITV in Summer, 2002. Convenience and unstratified sampling methods were used to obtain the sampling.

A combination of different scales were used in the questionnaire. In addition, open-ended questions were also included in the questionnaire.

Both quantitative and qualitative methods were used to analyze the data regarding UNI instructors' perceptions of their application of instructional design elements in distance teaching practice. Frequencies and percentages were calculated using SPSS, a statistical computer software package, with results analyzed, summarized and compiled into tables. Demographic data were analyzed using percentages and frequencies. A coding system was used to analyze the data regarding the open-ended survey questions.

All of these inquiries contributed to an understanding of instructors' perceptions and attitudes regarding application of instructional design elements in teaching distance education courses.

#### Population and Sample

Borg and Gall (1989) defined a target population as "all the members of a real or hypothetical set of people, events, or objects to which we wish to generalize the results of our research" (p. 216). The sample for this study was drawn from the overall population of the distance instructors who had been involved by Summer 2002, in teaching both undergraduate and graduate courses via the Internet and ITV (ICN) at UNI. This population was called the target population. Convenience and unstratified sampling methods were used to collect data. It was estimated that approximately 50 instructors who had taught by Summer 2002 via the Internet and ITV were chosen to participate in the

study. A mailed self-report survey was distributed to those distance instructors. A letter was attached to the questionnaire. Approval for the use of human subjects was sought and received from the Institutional Review Board (IRB) for the Protection of Human Subjects at UNI.

### Instruments

Revisions were made in the questionnaire based on the comments from the panel of distance educators. The comments included clarification in expression of ideas, improvement of instructions, and choice of wording. This information was incorporated into the final questionnaire which was used for the study.

The research questions were stated as:

1. To what extent will the instructors report implementation of identified instructional design elements in distance education courses?
2. To what extent have the instructors taken advantage of opportunities provided by UNI (or elsewhere) to design instruction for distance education?
3. What information will be gained that could promote better instruction at a distance at UNI?

These research questions were developed from issues and questions arising from the review of literature. The three research questions served as guideposts in developing the specific items in the questionnaire. There were two sections of information in the questionnaire. The first section, composed of both structured questions and unstructured or open-ended questions, contributed to answering the three research questions. The second section provided demographic information (see Appendix B).

The first section included 25 questions. Questions 4, 5, 6, 8, 9, 10, 12, and Questions from 13 to 21, and 23 were used to answer the first research question. Questions 1, 2, and 3 focused on the second research question. Questions 7, 11, 22, 24, and 25 addressed the third research question (see Figure 2). The demographic information was attached to the end of the questionnaire as a separate section.

The data-gathering tool for this proposed study consisted of a combination of different survey scales including an implicit scale (for Questions 2, 8), an explicit scale (for Questions 1, 2, and 3) a multiple response scale (for Questions 13, and 22); a comparative scale (for Questions 4, 9, and 20); and a verbal frequency scale (for Questions 14-19). Questions 5, 6, 7, 10, 11, 12, 21, 23, and 24 were open-ended questions. The researcher chose to use these different kinds of scales to obtain the richest information in the most possible way related to the instructors' application of instructional design elements in distance teaching.

#### Validation of the Instrument

Gay (1996) defined validity as “the degree to which a test measures what it is intended to measure; a test is valid for a particular purpose for a particular group” (p. 627). However, in survey research, a frequently neglected procedure is validating the questionnaire, which should be conducted so as to determine if it measures what it was developed to measure. When discussing questionnaire construction, Krathwohl (1993) advised researchers to make sure that respondents interpreted the questions as intended. He asserted that pretesting was important for this to occur. He also claimed that all



Figure 2. Figure of survey items and research questions.

Survey Item	Research Question 1	Research Question 2	Research Question 3
1		X	
2		X	
3		X	
4	X		
5	X		
6	X		
7			X
8	X		
9	X		
10	X		
11			X
12	X		
13	X		
14	X		
15	X		
16	X		
17	X		
18	X		
19	X		
20	X		
21	X		
22			X
23	X		
24			X
25			X

questionnaires should be pilot tested before use. Thus, it was important to pretest the questionnaire in order to validate it before the researcher attempted to use it.

Regarding how to pretest a questionnaire, Gay (1996) offered that the questionnaire should be tried out in a field test because doing so would yield data concerning instrument deficiencies and suggestions for improvement. Besides, having two or three available people complete the questionnaire first would result in the

identification of major problems. This researcher decided to use a focus group to pretest the questionnaire in this survey research.

The use of a focus group provided the researcher with another source of information and a second database. This group worked as a selected panel of distance educators. It consisted of the chair and four members of the researcher's dissertation committee, and one instructional designer. The chair and the four committee members were currently professors in three different departments at UNI. The chair and two members were professors in the Curriculum and Instruction Department; one member was a professor in the Educational Psychology and Foundations Department; the fourth member was a professor in the English Language and Literature Department. The instructional designer worked in the UNI Continuing Education Department. The focus group participants were homogeneous in one respect, as they all had had either teaching or working experience related to distance education. They were heterogeneous in that they represented different teaching or working backgrounds. These homogenous and heterogeneous features allowed the researcher to easily get feedback on the items in the questionnaire from different perspectives.

Since surveys are expensive and time-consuming, it was essential to ask the right questions and to ask them in the right way. By conducting this focus group before initiating a survey, the researcher obtained a better grasp of the problem and this helped to formulate the research questions more precisely. This focus group also helped the researcher understand the prospective survey respondents' general perspective on (a) the issues to be discussed, (b) frames of reference to be used, (c) ways of thinking and typical

vocabulary when handling the topics at hand, (d) the spectrum of opinions to be revealed and (e) the range of instruction needed. The focus group provided qualitative and exploratory information for the researcher's initial survey. The researcher applied the results provided by the focus group to the construction and revision of the survey questionnaire.

#### Data Collection Procedures

In compliance with federal regulations, this study was submitted to the Human Subjects Committee for approval. Responses to the survey were designed to be anonymous with no individual identification. A cover letter (see Appendix A) and self-addressed return envelope were included with the survey explaining the purpose of the research study and assuring confidentiality of the respondents. To preserve anonymity, no coding system was used on the surveys. The return envelopes were coded so that follow-up surveys would not be sent to those who had returned the survey instrument. Those UNI distance instructors who had been identified to participate in the study were given 3 weeks to complete the questionnaire and return it. A return rate of at least 70% was expected.

#### Data Analysis

To describe the perceptions and attitudes of distance teaching instructors, both quantitative and qualitative methods were used to analyze the data gathered from the instructors' answers to the research questions. Descriptive statistics were used to analyze the quantitative data. Frequencies and percentages were calculated using SPSS, a statistical computer software package, with the results analyzed, summarized, and

compiled into tables. Demographic data were analyzed also using descriptive statistics by calculating percentages and frequencies. A coding system, which a qualitative study usually employs, was used to analyze the qualitative data regarding the open-ended questions in the questionnaire.

Data were analyzed to examine perceptions and attitudes of UNI instructors, regarding application of identified instructional design elements in distance teaching courses. The research questions were answered and analyzed in this study. Chi-square tests were run on several of the factors:

- the number of courses the instructors had taught using only the ICN and WebCT;
- the completion of training to prepare them for ICN and WebCT instruction;
- the length of training for the ICN and WebCT instruction, the sufficiency of training for the ICN and WebCT;
- the number of courses they had taught using a combination of the two technologies;
- the ages of the instructors;
- the use of WebCT in on-campus courses.

Chi-square tests were used to determine if these factors were significant predictors of the results related to the training assisting the instructors using the ICN and WebCT for distance learning, and the training assisting them in designing instruction using the two technologies for distance learning. Through data analysis, the data were indexed and coded. Some important themes and patterns were generated.

## Results

Results were reported in the form of summary comments and a statistical analysis. The final portion of the study contains conclusions, discussions, and suggestions for future research.

## Chapter Summary

Chapter 3 has outlined the development of the survey questionnaire for the instructors who had taught before or taught in the summer, 2002, via the Internet and ITV at UNI. The seven different sections of the chapter were: (a) restatement of the problem, (b) survey methodology, (c) population and sample, (d) instruments, (e) data collection procedures, (f) data analysis, and (g) the results. Specifically, the purpose of this study and research questions are stated; the survey methodology is discussed in detail; the rationale for the selection of the sample is explained; how the research instrument is developed and validated is described; the significance of using a focus group is presented; and data collection procedures, data analysis techniques, and the way to present results are delineated.

## CHAPTER IV

### RESULTS

Chapter IV presents the study findings from an analysis of the data collected. This chapter includes five sections: (a) the characteristics of the study population who were surveyed are described, (b) instructors' perceptions regarding the first research question are reported, (c) instructors' perceptions concerning the second research question are shown; (d) instructors' perceptions related to the third research question are presented; and in the final section a chapter summary is provided.

The following research questions were posed:

1. To what extent will the instructors report implementation of identified instructional design elements in distance education courses?
2. To what extent have the instructors taken advantage of opportunities provided by UNI (or elsewhere) to design instruction for distance education?
3. What information will be gained that could promote better instruction at a distance at UNI?

#### Sample Demographics

The survey described in Chapter III was sent to 56 instructors who had been previously or were currently involved in teaching both undergraduate and graduate courses via the Internet and ITV during Summer 2002 at UNI. Out of the 56 instructors surveyed, 39 (69.6%) questionnaires were returned. Twenty-one (53.8%) of the subjects who returned the questionnaires were females and 18 (46.2%) were males. Their ages

Table 1

*Frequencies and Percentages for the Instructors' Ages*

Instructors' Ages	<i>N</i>	Percent
22-30	2	5.0%
31-40	6	15.0%
41-50	11	28.0%
51-60	15	38.0%
61+	5	13.0%

*Note.* *N* = 39

ranged from 22 to over 61. Many were in the categories of 41-50 and 51-60. Table 1 presents the distribution of the instructors' ages.

Table 2 reports on the distribution of respondents' teaching fields. As indicated, most respondents came from the College of Education. The rest were from the College of Humanities and Fine Arts, the College of Natural Sciences, and the College of Social and Behavioral Sciences. The subjects' teaching experience at the university level ranged from 1 year to 21+ years: 10 subjects had 0-5 years, 4 subjects had 6-10 years, 10 subjects had 11-15 years, 3 subjects had 16-20 years, and 12 subjects had 21+ years.

Table 2

*Frequencies and Percentages for the Instructors' Teaching Fields*

Instructors' Teaching Fields	<i>N</i>	Percent
<b>College of Education</b>		
Communication and Technology	1	3%
Curriculum and Instruction	8	20%
Educational Leadership	5	13%
Educational Psychology	4	10%
School Library Media Studies	1	3%
Special Education	6	15%
<b>College of Humanities and Fine Art</b>		
Communication Studies	4	10%
Language Teaching Methodology	1	3%
Linguistics /TESOL	1	3%
Music Theory and Related Subjects	1	3%
<b>College of Natural Sciences</b>		
Biology	1	3%
Mathematics Education	1	3%
<b>College of Social and Behavioral Sciences</b>		
Social Work (plus gerontology certificate program)	1	3%
Education Methods	1	3%
Science Education	3	8%

*Note. Total = 39*



### Research Question 1

Research Question 1 asked: “To what extent will the instructors report implementation of identified instructional design elements in distance education courses?” Survey Questions 4, 5, 6, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 23 answered this research question. Responses to these survey questions are summarized.

Survey Question 4 asked, “To what extent do you find the following WebCT tools helpful in attaining course objectives?”

Table 3 summarizes the results related to this survey question. The extent of WebCT tools helpfulness in attaining course objectives was calculated on 10 WebCT tools using comparative scale. The data in Table 3 shows that most faculty found the content module, syllabus, and discussion board and mail to be helpful. On the other hand, approximately half of the faculty did not use or find helpful the image database and student homepage.

Survey Question 5 asked, “What three advantages can you cite for using WebCT for distance learning and why?”

The instructors’ comments on the advantages of using WebCT for distance learning included the following: 11 instructors mentioned overcoming geographical constraints, 6 instructors mentioned helpful links and library services, 6 instructors commented on enhancing communication, 5 instructors commented on enhancing student empowerment, 5 instructors mentioned helping to establish a learning community, 4 instructors commented on varying instructional strategies, 3 instructors mentioned

Table 3

*Frequencies and Percentages for the Extent to Which the Instructors Found the WebCT Tools Helpful in Attaining Course Objectives*

WebCT Tools	Very Helpful / Somewhat Helpful	Not Helpful	Not Used	No Response
Content Module	51%	3%	13%	33%
Syllabus	59%	0.0%	8%	33%
Image Database	10%	3%	44%	44%
Calendar	31%	3%	28%	38%
Discussion/ Bulletin Board	59%	5%	3%	33%
Mail	61%	3%	3%	33%
Chat	36%	5%	20%	38%
Quiz/Survey	25%	5%	28%	41%
Student Presentation	28%	3%	33%	36%
Student Homepage	17%	3%	38%	41%

*Note.* N = 39

convenient assessment of student learning, and 2 instructors commented availability of study material.

Specific comments on overcoming geographical constraints included the fact that WebCT was convenient for students because it helped reach learners over a wide distance. Learners could access the course anywhere there was Internet service, thus saving travel costs. It also enabled instructors to monitor students anywhere.

Specific comments on helpful links and library services included that links and library services helped create a very structured course and enabled students to rapidly access current information via the Internet and electronic resources at UNI's Rod Library. Such beneficial and convenient service to distance learning students helped to ease the loneliness of the long-distance learner.

Specific comments on enhancing communication included using WebCT to enhance instructor/student and student/student interaction to create a better learning and teaching environment by helping instructors communicate with students and students communicate with each other. It also helped instructors provide immediate feedback to students and get feedback from students.

Specific comments on enhancing student empowerment included WebCT as a way of enabling students to organize their inquiries for meaningful discussion so as to enhance their empowerment. The asynchronous discussion feature allowed flexibility for time to reflect on learning, for holding additional discussions, for accessing grades (calculated grades), and for providing easy use of discussions/bulletin boards and an easy access to e-mail for the class.

Specific comments on helping to establish a learning community included that WebCT was tremendously useful in supporting instruction because its features helped create an electronic community of learners.

Instructors' specific comments on varying instructional strategies included that WebCT allowed the use of different kinds of instructional strategies since the student presentation area worked very well for collaboration among small groups and provided consistency in the presentation format. Responses also indicated that the home page was clean and easy to use, a quiz/survey could be designed for assessment at a distance, and discussions could be initiated for participation and interactions as WebCT had an excellent system for threading discussion boards.

Specific comments on convenient assessment of student learning included conveniently assessing student learning because they could easily access both old and new assignments in order to keep student records and track/monitor students' progress.

Under specific comments on the availability of study material, respondents said it was convenient to obtain printed materials via WebCT because there were fewer copyright restrictions and reduced paper costs.

Survey Question 6 asked, "What three limitations can you cite for using WebCT in distance learning and why?"

Instructors' comments on the limitations of using WebCT for distance learning included: 14 instructors mentioned WebCT framework limitations, 6 instructors mentioned an absence of face-to face instructor/student and student/student

communication, 5 instructors mentioned student participation, and 3 instructors commented on the lack of technical support.

Specific comments on the limitations of the framework of WebCT included the following: not all students were comfortable with the technology; teaching with WebCT was time-consuming and routine tasks took too many steps (setting up, posting information, downloading information, keeping students updated in the grade book, attachments needed to be in RTF or PDF format to work, e-mail needed for text formatting and e-mail attachment being slow); and students' access to WebCT depended on hardware/software/Internet access, etc.

Specific comments on an absence of face-to-face instructor/student and student/student communication and interaction included a limited student ability to develop relationships with each other which is critical in education leadership. Lack of face-to-face communication made it difficult to provide personal feedback from instructors.

Specific comments on student participation included instructor and student complaints on the class and the use of the WebCT. The reasons were that not all students participated in the WebCT class; it was difficult to facilitate/demonstrate constructivist/hands-on learning/teaching; students could hide and instructors had to watch for students who avoided participation; and some students were not using WebCT or WebCT was not working all the time.

Specific comments on the lack of technical support included the lack of technical assistance at the sites and problems with components that did not work on the Web, such

as the server. In addition, when instructors wanted to add more visual components to their course, they needed more fluency in using WebCT. These problems prevented the class from being delivered as effectively as possibly.

Survey Question 8 asked, "Which of the following do you use in your ICN instruction? How comfortable do you feel about using these?"

Table 4 presents the results related to this survey question. The level of instructors' comfort with using the ICN was calculated on each of five ICN tools using multiple-response scale. The data in Table 4 shows that no instructors reported feeling uncomfortable with using any of these tools. In addition, instructors also indicated that they used the CD player, electronic keyboard, personal laptop, fiber phone, fax, recording of sessions, presenters, slide projector, the internet, and guest speakers at distance sites.

Table 4

*Frequencies and Percentages for the Instructors' Level of Comfortableness Using ICN Tools*

ICN Tools	Very Comfortable	Somewhat Comfortable	Not Comfortable	No Answer
Overhead camera	82%	3%	0.0%	15%
Teacher camera	80%	5%	0.0%	15%
Computer	69%	10%	0.0%	20%
Off-site camera	67%	10%	0.0%	23%
VCR	67%	8%	0.0%	25%

*Note. Total = 39*

Survey Question 9 asked, “What advantages can you cite for using the ICN in distance learning and why?”

The instructors’ comments on the advantages of using the ICN for distance learning included: 18 instructors mentioned convenient and efficient communication for both teachers and students, 5 instructors listed enhanced interaction, and 2 suggested creating an opportunity for diversified experience.

Specific comments on convenient and efficient communication for both teachers and students included the following ideas: the ICN could help those students who were geographically isolated get into specific education programs to acquire an education (such as higher degree or certificate programs) not otherwise accessible to them.

The comments on enhanced interaction included that the ICN could make instruction interactive owing to its synchronous feature. This allowed interaction between teachers and students in “real time”; there was more contact in remote areas. The use of this advanced technology could make learning and teaching more effective.

The comments on creating an opportunity for diversified experience included that the ICN brought into the classroom the diversified experience and expertise of in-service teachers who lived and worked in far-flung areas of the state.

Survey Question 10 asked, “What limitations can you cite for using the ICN in distance learning and why?”

Instructors’ comments on the limitations of using the ICN for distance learning included: 18 instructors mentioned lack of face-to-face instructor/student and

student/student interaction, 9 instructors mentioned the technology failures, and 3 instructors mentioned pedagogical difficulties.

Specific comments on lack of the face-to-face instructor/student and student/student interaction included the lack of personal contact directly with the students as one of the major limitations for using the ICN in distance learning. Instructors could not see or feel what students were thinking, how they were reacting, or if students were staying on task since it was not possible to have eye contact with all students all the time or to read their body language. The ICN also hampered normal teacher movement around the classroom. Thus, instructors found it difficult to get to know the students as individuals and it was easy for students to avoid being engaged in class. Students were less likely to seek out the instructor for assistance. Instructors could not visit students when they had problems except via on-line, e-mail or phone. Moreover, students did not get to know one another because remote students could not always see on-site students and on-site students could not hear remote students clearly.

Specific comments on technology failures noted that in general there were inadequacies with the system, poor control over the environment, and no technical staff to create desired learning conditions, especially at off-campus sites. Not all remote sites were equally equipped. Some did not have operable fax machines, closed circuit telephones, or computers. There were poor VCR and computer transmissions from distant sites. Slide projection resulted in terrible colors. These inadequacies slowed class down and inhibited effective interaction.



Specific comments on pedagogical difficulties included: the ICN pedagogically inhibited effective teaching because it changed the way in which instruction was presented. The system was designed mostly for “delivery,” not for discussion. Running a seminar course was not easy. Therefore, it was difficult to organize instruction via the ICN.

Survey Question 12 asked, “When organizing your content which of the following do you consider?”

Table 5 presents the data related to which elements instructors considered when they organized the course content.

Table 5

*Frequencies and Percentages for Which Elements to Consider When the Instructors Organize the Content*

Instructional Elements	<i>N</i>	Percentage
What the goals and objectives were	36	92%
What content to include or leave out	33	84%
What was the best way to sequence or organize the content	35	90%
What media should be used	35	90%
What resources should be selected to support instruction	32	82%
Allocation of time	33	85%

*Note. Total = 39*

The data in Table 5 indicates that almost all instructors considered each of these instructional elements as they organized their course. In addition, instructors also considered other elements: (a) having hard copies of necessary materials in their hands in a timely fashion; (b) different levels of students' capabilities; (c) how to involve the students over ITV; (d) student needs; (e) what media was available; (f) keeping all students actively engaged, making every minute count, designing varying activities in 3 hours so that the class was not boring and so that the teacher was not a talking head.

Survey Questions 13-20 asked, "How often do you typically use the following in your distance learning instruction?"

Table 6 shows the results concerning questions 13-20. The frequency of instructors' use of instructional strategies was calculated on each of the eight items by verbal frequency scale. Therefore, most instructors frequently used discussions, student presentation, student-student interaction, and student feedback. Few instructors used role playing.

Survey Question 21 asked, "To what extent are you able to allow for the following student considerations?"

Table 6

*Frequencies and Percentages for Instructors' Use of Instructional Strategies*

Instructional Strategies	Rarely or never	Not very often	Sometimes	Quite often	All the time	No answer
Lecture	8%	15%	33%	28%	13%	3%
Discussion	0%	5%	13%	4%	36%	3%
Simulations	6%	10%	26%	21%	8%	3%
Demonstrations	8%	20%	38%	23%	5%	5%
Role Playing	13%	33%	31%	13%	0%	10%
Student Presentation	5%	5%	31%	46%	10%	2%
Student-Student Interaction	2.6%	5.1%	28.2%	30.8%	30.8%	2.6%
Student Feedback	2.6%	2.6%	30.8%	41.0%	20.5%	20.6%

*Note.* Total = 39

Table 7 illustrates the results regarding Question 21. With few exceptions, faculty reported they could allow for student interest, skills, knowledge, experience, and learning styles.

Survey Question 23 asked, "Which of the following do you use in assessing students?"

Table 7

*Frequencies and Percentages for the Extent to Which Instructors' Could Allow for Student Considerations*

Student Considerations	None	Some	A lot	No answer
Student attitude or interest	5%	54%	38 %	3%
Student skills	3%	51%	44%	3%
Student knowledge	3%	49%	46%	3%
Student experience	5%	38%	54%	3%
Student learning styles	8%	64%	26%	3%

*Note.* N=39

The data in Table 8 shows that a large percentage of instructors reported using papers (79.5%), class participation (84.6%), and performance or product assignment (89.7%) for assessment. A small number of instructors reported using quizzes (33.3%). Thus, most instructors used papers, class participation, and performance or product assignments to assess student performance.

Research Question 2

Research Question 2: To what extent have the instructors taken advantage of opportunities provided by UNI (or elsewhere) to design instruction for distance education?

Survey Questions 1, 2, and 3 answer Research Question 2. The results regarding this research question are shown as follows:

Table 8

*Frequencies and Percentages for Instructors' Use of Student Assessment Tools*

Student Assessment Tools	<i>N</i>	Percent
Quiz	13	33%
Exams	19	49%
Papers	31	80%
Journals or other written comment	23	59%
Class participation	33	84%
Performance or product assignment	35	80%

*Note.* Total = 39

Survey Question 1 contains several questions related to teaching courses using only the ICN. The questions and summary of responses are indicated in Table 9. As to how long the ICN training was, 13 reported less than one day, 4 reported one day, and 13 reported more than day. Nine responses were missing.

The reasons instructors considered training to be sufficient included: (a) the training covered essential skills in how to use the technology and demonstrated how the equipment worked clearly and completely; (b) the instructional designer in the Continuing Education Department did a good job helping them; (c) two/three days gave them the opportunity to explore many aspects of the ICN; and (d) one hour of training offered a personal one-on-one introduction to the equipment. Therefore, most of the respondents who received the ICN training thought the training was sufficient because

Table 9

*Percentage of Respondents for Each Option on Survey Question 1*


---

1. How many courses have you taught using only the ICN?

Circle one.

- |           |     |
|-----------|-----|
| a. 0-5:   | 62% |
| b. 6-10:  | 15% |
| c. 11-15: | 10% |
| d. 15+:   | 13% |

Did you complete training to prepare you for ICN instruction? 85% Yes. 13% No. 2% missing.

How long was the training? (see text). Was the training sufficient? 88% Yes. 5% No. 7% missing.

Did the training assist you in using this technology for distance learning? 80% Yes. 0% No. 20% missing.

Did the training assist you in designing instruction for distance learning? 54% Yes. 26% No. 20% missing.

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*Note.*  $N = 39$

they felt it covered basics/essentials clearly and completely and taught the skills needed.

Those who held a different opinion reported that they did not have enough hands-on experience.

Survey Question 2 contains several questions related to teaching courses using only WebCT. The responses are indicated in Table 10.

As to how long the WebCT training was, the answers ranged from 0.5 hour to 1 week. Among the 13 instructors who completed training to teach using WebCT, the training time varied between 2 hours and 3 days. Six reported less than one day; 4

Table 10

*Percentage of Respondents for Each Option on Survey Question 2*

## 2. How many courses have you taught using only WebCT?

Circle one.

- a. 0-5: 85%
- b. 6-10: 10%
- c. 11-15: 5%
- d. 15+: 0.0%

Did you complete training to prepare you for WebCT instruction? 33% Yes. 44% No. 23% missing.

How long was the training? (see text). Was the training sufficient? 23% Yes. 10% No. 67% missing.

Did the training assist you in using this technology for distance learning? 33% Yes. 3% No. 64% missing.

Did the training assist you in designing instruction for distance learning? 26% Yes. 8% No. 66% missing.

*Note.*  $N = 39$

reported one day; and 16 reported more than a day; missing data, 13. Those who viewed training as sufficient made the following comments: (a) excellent training plus backup support through the Continuing Education Department; (b) being able to get help in team teaching from other instructors who were experienced in teaching via WebCT; (c) the Continuing Education Department staff continued to work with instructors as support persons and resources when WebCT was updated and more features were available; (d) previous experience teaching distance education courses via the Web; (e) being able to learn the necessary aspects of the various tools of the WebCT.

Those who reported training as not sufficient said: (a) being able to use WebCT, but not being able to design instruction for this technology; (b) training was mechanical--only using WebCT software; (c) not having enough experience with the new technology; (d) needed additional training for using this technology to design instruction.

Thus, more than half of the respondents who completed the training indicated that the training was sufficient chiefly because they could learn the essentials of WebCT and because excellent technical support was available from the Continuing Education Department and experienced colleagues. The major reasons for insufficient training time were that the training only focused on how to use WebCT but did not include how to design instruction using it.

Survey Question 3 asked, "How many courses have you taught using a combination of ICN and WebCT?" Of 37 respondents, 14 reported no combined courses while 11 reported 1 or 2 combined courses and 12 reported 3 or more.

### Research Question 3

Research Questions 3: What information will be gained that could promote better instruction at a distance at UNI? Questions 7, 11, 22, 24, and 25 answer this research question. The findings contributing to this research question are illustrated below.

Survey Question 7 asked, "What additional support could you use to make WebCT more effective in your distance education course and why?"

The instructors' comments on additional support to make WebCT more effective included: 6 instructors mentioned technological support, 4 instructors suggested the training support, and 3 instructors commented on support for equipment improvement.



Specific comments on technological support included continuing to rely on the ongoing technological support from the Continuing Education Department. Instructors said it was critical to have someone with WebCT expertise on campus to help with details/conceptual advice to develop WebCT materials for a course to make the class run smoothly. It was difficult to edit the content, and instructors said they needed a support staff to help students at remote sites connect WebCT to make the class go smoothly.

Specific comments on training support included needing a course on WebCT in training, providing components of instructional design strategies for distance learning environment, more examples on how to use the tools, and an instructor to walk them through the first class.

Survey Question 11 asked, "What additional support could you use to make the ICN more effective in your distance education course and why?"

The instructors' comments on additional support to make the ICN more effective included: 13 instructors mentioned technological support and 5 instructors mentioned pedagogical support.

Specific comments on technological support included: the need for more accessible technological support in order to enable the ICN to always function. These included factors such as voice-activated microphones to make conversations a little smoother, good equipment such as fax and xerox machines, good maintenance at distance sites, presence of a facilitator at all times, the provision of an adjacent computer lab, and permission for students to practice using the ICN technology and equipment.

Specific comments on pedagogical support included the need for pedagogical support to make the ICN instruction more effective such as developing more ideas for group work and more strategies for increasing student/student interaction, using effective simulations, role playing, only using the ICN to teach specialty classes, possibly meeting students beforehand, or originating from a different site every class time.

Survey Question 22 asked, “What assistance or support, if any, would be helpful to you to improve the way you address student considerations?”

The instructors’ comments on assistance/support to improve how they address student considerations included: 4 instructors mentioned motivating students to participate, 2 instructors mentioned the importance of getting assistance to complete assessments, 2 instructors mentioned training help, and 2 mentioned pedagogical support. Specific comments on student motivation included the following. The motivational level for some students was lower than for traditional students. These individual students lost out in this general education course due to distractions and divided attention. To enhance the participation of these students, instructors needed to have more opportunities to learn about them. For example, instructors might first have these students in a traditional class or survey students to learn about their interests so that they could be accommodated in the distance learning environment.

Specific comments on getting assistance to complete the assessments included the following. Teaching on the ICN is an overload and the unavailability of qualified student assistants to help with the grading makes it difficult to return assignments to students soon. Thus, instructors suggested having qualified work-study students help them.

Comments on providing training included the need for more ICN training, or training on the use of technology in general, and more hands-on experience in order to better address learners' considerations.

Comments on pedagogical support included the instructors' need to add time before/after class for student comments and to understand students' learning styles because it is not easy to systematically address the question of adapting to different learning styles.

Survey Question 24 asked, "What additional support could you use to improve assessment of students of your course and why?"

The instructors' comments on additional support to improve assessment of students included: 2 instructors suggested help designing online assessments (it was hard to give quizzes); 2 instructors mentioned the need for a personalized counter or informational sheet for his/her web page; 1 instructor suggested designing a "work sampling" component to coursework; 1 instructor mentioned having someone observe him/her in "action" on the ICN and discussing recommendations for improvement; 1 instructor recommended initiating ideas on conducting peer assessment in an ICN/Web environment; 1 instructor suggested allowing students to submit papers or journals via e-mail (this may help the instructor know how students were interpreting instruction and have an opportunity to clarify misunderstanding before the final project).

Survey Question 25 asked, "What additional support could you use to make your instruction more effective in your distance education?"

The instructors' comments on additional support to make instruction more effective in distance education included: 8 instructors mentioned technological support, 4

instructors mentioned more pedagogical assistance, 3 instructors mentioned more face-to-face interaction, and 3 instructors suggested more regular workshops.

Specific comments on technological support included the need for more technological support to make distance instruction more effective such as making the equipment/network work 100% of the time, providing support for visuals and techniques, updating the ICN technology, having facilitators at every site, and using better video/RGB quality from computers.

Comments on more pedagogical assistance included periodic updates for improving instruction; access to a variety of videos, CDs, or Web sites that supplement the primary instruction; more time allowed for discussion since video demonstrations eliminate down time during demonstrations; and providing models of really effective instruction.

Comments on more face-to-face interaction included feedback from students needed on the instructor's public speaking and technology skills, and making face-to-face presence mandatory at the beginning of a semester.

Comments on more regular workshops included the need for more regular workshops on new tools/techniques of WebCT.

#### Chapter Summary

Chapter 4 presented the analysis and synthesis of the research findings related to the three research questions resulting from the examination of data collected. The findings of the survey data analysis are organized by the three research questions. The analysis and interpretation of the descriptive statistics, including frequencies,

percentages, and open-ended questions, were used to determine some important characteristics of the respondents associated with the three research questions.

The results regarding Research Question 1 are presented as follows. Most faculty found the WebCT content module, syllabus, discussion board, and mail to be helpful. The advantages of using WebCT for distance learning included overcoming geographical constraints, helpful links and library services, enhanced communication, enhanced student empowerment, helping to establish a learning community, varying instructional strategies, convenient assessment of student learning, and availability of study material. The limitations of using WebCT for distance learning included WebCT framework limitations, an absence of face-to-face instructor/student, and student/student communication, student participation, and lack of technical support. No instructors reported feeling uncomfortable using the overhead camera, teacher camera, computer, off-site camera, or VCR. The advantages of using the ICN for distance learning included convenient, efficient communication for teachers and students, enhanced interaction, and an opportunity for diverse experiences. The limitations of using the ICN for distance learning included lack of the face-to-face instructor/student and student/student interaction, technology failures, and pedagogical difficulties.

Almost all of the instructors considered the following when they organized a course: the goals and objectives, the content selection, the best way to sequence or organize the content, the selection of media and resources, and allocation of time. Most instructors, in their distance learning instruction, frequently used discussions, student presentations, student-student interaction, and student feedback. Most faculty reported

they could allow for student interests, skills, knowledge, experiences, and learning styles when they taught at a distance. Most instructors used papers, class participation, and performance or product assignments to assess student performance.

The results regarding Research Question 2 are as follows. Most of the instructors had relatively little experience of teaching using only the ICN. Most instructors completed training to prepare for the ICN instruction. The training time for approximately half of the instructors was one day or more than one day. Most instructors thought the training was sufficient and that the training assisted them in using this technology for distance learning. More than half of the instructors thought that the training assisted them in designing instruction for distance learning.

Most of the instructors had relatively little experience teaching using only WebCT; less than half of the instructors completed training to prepare for WebCT instruction; the training time for most of the instructors varied between 2 hours and 3 days; about one-fourth of the instructors thought the training was sufficient; about one-third of the instructors thought that the training assisted them in using this technology for distance learning, around one fourth of the instructors thought that the training assisted them in designing instruction for distance learning. Most of the instructors had the experience teaching using the combination of the WebCT and the ICN.

The results regarding Research Question 3 are as follows. The instructors needed additional support to make WebCT more effective. This included technological support, training support, and equipment improvement support. Instructors needed additional support to make the ICN more effective which included technological support, and

pedagogical support. The instructors needed assistance/support to improve the way they addressed student considerations which included motivating students to participate, getting assistance completing assessments, training and pedagogical support. The instructors' needed additional support to improve student assessments which included help designing for online assessments. Instructors said that they needed a personalized counter or informational sheet for their web page. The instructors needed additional support to make instruction more effective in distance education. This included: technological support, more pedagogical assistance, more face-to-face interaction, and more regular workshops.

Chi-square tests analysis showed that significant relationships were not found between any demographic factor and training helping instructors using the ICN and WebCT for distance learning and training helping instructors design instruction using distance learning technologies

Chapter 5 provides conclusions of this study, recommendations for the use of the findings obtained from this research, and recommendations for further study.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

Chapter V addresses three goals: (a) conclusions of this study, (b) recommendations for the use of the findings as they may be specifically applied to the distance education program at the University of Northern Iowa, and (c) recommendations for further study.

The purpose of this study was to describe and analyze the perceptions and attitudes of the instructors at the University of Northern Iowa (UNI), Cedar Falls, Iowa, on if and how they understand and apply the instructional design elements when teaching at a distance. To accomplish the purpose of the study, three research questions were asked:

1. To what extent will the instructors report implementation of identified instructional design elements in distance education courses?
2. To what extent have the instructors taken advantage of opportunities provided by UNI (or elsewhere) to design instruction for distance education?
3. What information will be gained that could promote better instruction at a distance at UNI?

#### Conclusions

Based on the findings of this research, the following conclusions are made:

1. Generally, when teaching at a distance, most of the instructors consider student attitudes or interests, student skills, student knowledge, student experience, and student learning styles.



2. When organizing the content, almost all of the instructors consider such elements as goals and objectives, selection of the content, organization of the content, selection of media, selection of resources, and allocation of time.

3. When teaching at a distance, most instructors frequently use such instructional strategies as discussions, student presentation, student-student interaction, and student feedback.

4. The instructors generally believe that there are more advantages than limitations of WebCT for distance learning. The instructors believe that there are both advantages and limitations to using the ICN for distance learning.

One of the limitations of using WebCT for distance learning identified in this study was the lack of instructor/student and student/student interaction. This result has expanded Wang-Chavez and Branon's research findings reported in 2001 in which they found that there was a lack of interaction between the instructor and students for the WWW/Internet-based instruction.

One of the limitations of using the ICN for distance learning found in this study was the lack of face-to-face instructor/student and student/student interaction. This finding has provided additional support for what Sorensen and Baylen reported in their survey conducted in 2000 in which they found that there was a lack of teacher/student and student/student interaction for the instruction delivered via the ITV.

Another limitation of using the ICN for distance learning found in this study was the technology failures. This result supported Thomerson and Smith who found similar results in 1996.

5. Over half of the instructors think such WebCT tools as content module, syllabus, discussion/bulletin board, and mail are helpful in attaining course objectives. The instructors generally feel comfortable about using such ICN tools as the overhead camera, teacher camera, computer, off-site camera, and VCR in their ICN instruction.

6. To evaluate student performance, most instructors use papers, class participation and performance, or product assignment.

7. Most of the instructors had taught using only the ICN and had completed training to use the ICN for instruction. Of the instructors who completed training for the ICN instruction, most thought the training was sufficient. Most of the instructors believed that the training had helped them use the ICN and design instruction for distance learning. Most instructors had taught using only WebCT. Approximately half of the instructors had not completed training to prepare them for WebCT instruction. A majority of the instructors who completed training in WebCT think that the training was sufficient. Quite a number of them hold different opinions because they feel that the training only focused on how to use WebCT but did not include how to design instruction using it. One-third of the instructors think that the training for the instructors helped them use WebCT for distance learning and one-fourth think the training helped them design instruction for distance learning. Most of the instructors had taught using a combination of ICN and WebCT.

8. The instructors stated a need for the additional support to make WebCT more effective in their distance education courses which includes technological support, training support, and equipment improvement support.

9. The instructors stated a need for additional support to make the ICN more effective in their distance education courses which includes technological support and pedagogical support. The instructors need more training on the ICN or training on the use of technology and more hands-on experience in order to better address learners' considerations. This finding has supported what Gehlauf et al. accomplished in 1995.

10. The instructors stated a need for additional assistance or support to improve the way they address student considerations, to improve assessment of students of their course, and to make their instruction more effective in their distance education.

#### Recommendations for Practice

Instructors' perceptions are important in terms of identifying problems and providing suggestions for improving instruction in the future. Implications of the findings in this study suggest strategies to support instructors in applying instructional design elements when they teach at a distance via the Internet and ITV at UNI. Based on the conclusions of the study, it is recommended that:

1. The results of this study should be forwarded to the Office of the Continuing Education Department for the purposes of discussing how the results could impact the further development of the ICN and WebCT system at UNI.

2. Those instructors who teach using WebCT and who did not attend the WebCT workshop offered on campus should be encouraged to attend these sessions.

3. How to design instruction using WebCT should be taught in the WebCT workshop.

4. Instructors teaching via ITV should be more involved in the across-site activities to increase interactions with the students and create more opportunities for students at the host-site to interact with the students at other sites.

5. Additional support which includes technological support, training support, and equipment improvement support should be provided to the instructors who teach at a distance to make WebCT more effective in their distance education courses.

6. Additional support which includes technological support and pedagogical support should be provided to the instructors who teach at a distance to make the ICN more effective in their distance education courses.

7. Additional assistance or support should be provided to instructors who teach at a distance to improve the way they address student considerations, to improve student assessment, and to make their instruction more effective in distance education.

#### Recommendations for Further Research

This research is a descriptive study of the perceptions of instructors at the University of Northern Iowa, Cedar Falls, on if and how they understand and apply the instructional design elements when teaching at a distance. More research is needed to broaden our understanding of instructors' perceptions of the application of instructional design elements in the distance teaching process and to determine the relative importance of various factors that may assist or hinder such application at UNI and other institutions of higher education. The following recommendations focus on questions developed during this study that could not be addressed because they were beyond the scope of this research. Based on the findings in this study, it is recommended that:

1. This study be replicated at other institutions delivering undergraduate and graduate courses via WebCT and ITV to determine if instructors' related perceptions are similar or if disagreement exists.

2. Future research could use a purely qualitative research method of observation and in-depth interviews to help understand instructors' perceptions of the application of instructional design elements in the distance teaching process.

3. Research should examine the differences in instructors' perceptions based on their training, length of professional experience, and academic discipline.

4. Future studies could examine the pedagogical changes necessary to deliver undergraduate and graduate education using WebCT and ITV.

In summary, the instructors' perceptions are for the most part positive. This study employed a descriptive method to analyze data and generated themes that contribute to the advancement of the knowledge level in this field of research.

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APPENDIX A  
COVER LETTER

May 25, 2002

Dear Distance Education Instructor:

The enclosed survey is to gather information related to your experience as an instructor who has used, or will be using, the ICN and/or WebCT to deliver instruction at a distance. I am gathering data for my doctoral dissertation entitled "Teachers' Perceptions of the Application of Instructional Design Elements in the Distance Teaching Process." The goal of this research is to recommend ways in which support for instructors can be enhanced and improved at UNI.

This dissertation study has been approved by the UNI Human Participants Review Committee and has been reviewed by the Continuing Education Office. If you have any questions, please contact me or the chair of my dissertation committee, Dr. Sharon Smaldino.

I thank you very much in advance for agreeing to participate in this study. Enclosed is a survey which will take approximately 15 to 20 minutes for you to complete. Your responses are important. The information obtained from you is confidential and will be used only to improve instructional support. Your participation is voluntary. Please return the completed survey with your comments and suggestions by June 28 , 2002.

Sincerely

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APPENDIX B  
QUESTIONNAIRE

Survey

Design of Instruction for Distance Education

The following survey seeks your opinion about the design of instruction for teaching distance education courses at UNI. Your participation is completely voluntary and your survey answers will remain confidential.

1. How many courses have you taught using only the ICN?

Circle one.

- a. 0-5
- b. 6-10
- c. 11-15
- d. 15+

Did you complete training to prepare you for ICN instruction? \_\_\_\_ Yes. \_\_\_\_ No.

How long was the training? \_\_\_\_\_. Was the training sufficient? \_\_\_\_ Yes. \_\_\_\_ No.

Please explain:

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Did the training assist you in using this technology for distance learning? \_\_\_\_ Yes. \_\_\_\_ No.

Did the training assist you in designing instruction for distance learning? \_\_\_\_ Yes. \_\_\_\_ No.

2. How many courses have you taught using only WebCT?

Circle one.

- a. 0-5
- b. 6-10
- c. 11-15
- d. 15+

Did you complete training to prepare you for WebCT instruction? \_\_\_\_ Yes. \_\_\_\_ No.

How long was the training? \_\_\_\_\_. Was the training sufficient? \_\_\_\_ Yes. \_\_\_\_ No.

Please explain:

---

Did the training assist you in using this technology for distance learning? \_\_\_\_ Yes. \_\_\_\_ No.

Did the training assist you in designing instruction for distance learning? \_\_\_\_ Yes. \_\_\_\_ No.

3. How many courses have you taught using a combination of ICN and WebCT? \_\_\_\_\_.

4. To what extent do you find the following WebCT tools helpful in attaining course objectives?

	Very Helpful	Somewhat Helpful	Not Helpful	Not Used
a. Content module	_____	_____	_____	_____
b. Syllabus	_____	_____	_____	_____
c. Image Database	_____	_____	_____	_____
d. Calendar	_____	_____	_____	_____
e. Discussion/Bulletin Board	_____	_____	_____	_____
f. Mail	_____	_____	_____	_____
g. Chat	_____	_____	_____	_____
h. Quiz/Survey	_____	_____	_____	_____
i. Student Presentation	_____	_____	_____	_____
j. Student Homepage	_____	_____	_____	_____

5. What three advantages can you cite for using WebCT for distance learning and why?

6. What three limitations can you cite for using WebCT in distance learning and why?

7. What additional support could you use to make WebCT more effective in your distance education course and why?  
 8. Which of the following do you use in your ICN instruction? How comfortable do you feel about using these?  
 Check all that apply.

	Very Comfortable	Somewhat Comfortable	Not Comfortable
<input type="checkbox"/> Overhead camera	_____	_____	_____
<input type="checkbox"/> Teacher camera	_____	_____	_____
<input type="checkbox"/> Computer	_____	_____	_____
<input type="checkbox"/> Off-site camera	_____	_____	_____
<input type="checkbox"/> VCR	_____	_____	_____
<input type="checkbox"/> Other, please specify: _____	_____	_____	_____

9. What advantages can you cite for using the ICN in distance learning and why?

10. What limitations can you cite for using the ICN in distance learning and why?

11. What additional support could you use to make ICN more effective in your distance education course and why?

12. When organizing your content which of the following do you consider (Check all that apply)

- What the goals and objectives are
- What content to include or leave out
- What is the best way to sequence or organize the content
- What media should be used
- What resources should be selected to support instruction
- Allocation of time
- Other, please specify: \_\_\_\_\_

Using the following scale, respond to items 13-20.

How often do you typically use the following in your distance learning instruction?

	Rarely or never	Not very often	Sometimes	Quite often	All the time
13. Lecture	_____	_____	_____	_____	_____
14. Discussion	_____	_____	_____	_____	_____
15. Simulations	_____	_____	_____	_____	_____
16. Demonstrations	_____	_____	_____	_____	_____
17. Role playing	_____	_____	_____	_____	_____

18. Student presentation \_\_\_\_\_
19. Student-student interaction \_\_\_\_\_
20. Student feedback \_\_\_\_\_

21. To what extent are you able to allow for the following student considerations?

- |                                | None  | Some  | A lot |
|--------------------------------|-------|-------|-------|
| • Student attitude or interest | _____ | _____ | _____ |
| • Student skills               | _____ | _____ | _____ |
| • Student knowledge            | _____ | _____ | _____ |
| • Student experience           | _____ | _____ | _____ |
| • Student learning styles      | _____ | _____ | _____ |

22. What assistance or support, if any, would be helpful to you to improve the way you address student considerations?

23. Which of the following do you use in assessing students? (Check all that apply)

- \_\_\_\_ a. Quiz
- \_\_\_\_ b. Exams
- \_\_\_\_ c. Paper
- \_\_\_\_ d. Journals or other written comment
- \_\_\_\_ e. Class participation
- \_\_\_\_ f. Performance or product assignment

24. What additional support could you use to improve assessment of students of your course and why?

25. What additional support could you use to make your instruction more effective in your distance education course(s) and why?



## Demographic Information

1. Gender
  - a. Male
  - b. Female
  
2. Age
  - a. 22-30
  - b. 31-40
  - c. 41-50
  - d. 51-60
  - e. 61+
  
3. I have been teaching at the university level for
  - a. 0-5 years
  - b. 6-10 years
  - c. 11-15 years
  - d. 16-20 years
  - e. 21+ years
  
4. My teaching field is  
\_\_\_\_\_
  
5. The reason that I use WebCT and ICN to teach:
  
  
  
6. Do you use WebCT in on-campus courses? \_\_\_ Yes. \_\_\_ No.

Thank you for completing this survey. If you would like to include any additional comments, please use the space below and back of this page.

APPENDIX C  
HUMAN PARTICIPANTS REVIEW LETTER

Human Participants Review Committee  
122 Lang Hall  
University of Northern Iowa  
Cedar Falls, IA 50614  
319.273.6148

Date: June 11, 2002

To: Lihua Zheng, Curriculum & Instruction, 0606

From: Dr. Mary E. Losch, Chair  
UNI Human Participants Review Committee  
(Institutional Review Board)

Title: Teachers' Perceptions of the Application of Instructional Design Elements in Distance Teaching Process

Re: ID# Zheng051402

We have received your updated cover letter and based on the modifications contained therein your project, "Teachers' Perceptions of the Application of Instructional Design Elements in Distance Teaching Process," which you submitted for human participants review on May 14, 2002, has been determined to be exempt from further review under the federal guidelines for human participant protections. You may begin enrolling human research participants in your project.

Your project need not be submitted for continuing review unless you alter it in a way that increases the physical, emotional, social, or legal risk to the participants or you change the targeted participants. If you make any such changes in your project, you should notify the Human Participants Review Committee in the Graduate College Office before continuing with the research.

If you have any further questions about the Human Participants Review policies or procedures, please contact me at [mary.losch@uni.edu](mailto:mary.losch@uni.edu) or David Walker, the Human Participants Committee Administrator, at 319.273.6148 or email [david.walker@uni.edu](mailto:david.walker@uni.edu). Best wishes for your project success.

cc: Institutional Review Board