

ISSUES OF ONLINE COURSE DESIGN

by

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ABSTRACT

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The advances and development of information and communication technology, especially Internet and the World Wide Web, enables learner to acquire information and learning opportunities without time and location constraints. Online distance learning complements the classroom teaching, and together, they serve the rising needs of lifelong learning in the 21st century.

The problem of this empirical study was to determine the instructional design of ten selected online courses that meet the need of interactive and collaborative online learning based upon an assessment template outlining the three criteria classes: facilitating online learning, content presentation, and application of information and communication technology. The assessment template was developed by the researcher, and proved by the research committee members.

The particular purpose of the empirical study was to identify issues in designing online courses by comparing ten selected Internet based classes based on an instrument designed by the

researcher and proved by the members of research committee. The second purpose was to portray the types of instructional design methods and technologies applied among these courses.

The sample population of this research was ten online courses designed by university instructors from nine universities in the United States of America, and one educational group in Canada.

The findings of the study indicated that the online instructional design among the evaluated courses was strongly influenced by the pedagogy of one-to-many classroom teaching. Course designers/instructors need more professional training to improve the quality of user-friendly and visual effects and the usage of information and communication technology. Last, but not the least, there is a need to research on good practices of designing and facilitating online collaborative learning.

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CHAPTER ONE

INTRODUCTION

“Great, I say, because of the excellence of the things themselves, because of their newness, unheard of through the ages, and also because of the instrument with the benefit of which they make themselves manifest to our sight” (Galileo Galilei, 1610, p. 1).

Just like Galileo, in 1609, undertook his observation of the Moon with a new technology device – the twelve-powered telescope, nearly four centuries later, learners and educators start experiencing an educational evolution – online distance learning. This time, aided by virtual devices and instruments of the information and communication age, educators have the chance to provide more flexible and efficient learning opportunities to learners.

The transition to the new millennium, not least coined by an astounding development of information and communication technology, brings forward two educational trends at the dawn of an upcoming knowledge era – lifelong learning, and online distance learning. Both trends, though having their respective roots in advancements in different areas, are to be regarded complementary and comprise an intermingled aggregation of many teaching and learning aspects, e.g. to meet the needs of both the instructor and the learner, or to meet the needs of all areas of education, like in business and industry, in college and the university, in government and the military, or in vocational and on the job training (Ben-Jacob and Levin, 1998).

Either lifelong learning or asynchronous distance learning is not new concept of this century. Learning is indeed a lifelong matter, and has always been. But, it had never so far become an economic as well as societal necessity among the majority of a population as a surviving skill (Hake, 1999). With respect to asynchronous distance learning, over a century ago in 1840, Sir Isaac Pitman, the English inventor of shorthand, had already delivered instruction to

a potentially limitless audience and corresponded by mail. Within a few years, Pitman was communicating with a legion of far-flung learners (Phillips, 1998).

The only thing new to us is the advance of information and communication technology, specifically, the Internet and the World Wide Web that present the hope for lifelong learners to access information and construct their knowledge without time and physical constraints.

Anytime and anywhere is a benchmark of distance learning. Hilary Perraton (1988) defines distance education as an educational process in which a significant proportion of the learning is conducted by someone removed in space and/or time from the instructor. Although distance education has its roots in correspondence study, most recent distance learning today is offered over the Internet and/or the World Wide Web. Rather than in a four-walled classroom, the Internet-based teaching and learning environment is located within a computer-mediated communication system. It consists of a set of group communication work 'spaces' and facilities, which are constructed in software (Hiltz, 1995). The Web researcher B. H. Khan (1997) defines Web-based instruction as a hypermedia-based instructional program that employs the attributes of the World Wide Web to create a rich and meaningful learning environment where learning is fostered, guided, and supported. Hence teaching and learning have been never connected by technology so immensely. This is, after all, a new phenomenon in the educational arena. It complements classroom instruction to satisfy exploding learning needs in a knowledge age. At the same time, it also challenges the lecture-test-exam model of teaching and learning.

Long ago, Plato had already seized the nature of a true liberal education. It is independent of time and place. It occurs in the minds of the learners rather than in blocked classrooms (Phillips, 1998). By elaborating Plato's idea, scholars believe that an essential component of education pedagogy in this century will be collaborative learning because it supports active

learning and also, because the workplace, for which the students are prepared, requires collaboration. As corporations become more global, collaboration will be mediated and supported by technology. Shifts of learning theory from behaviorism to cognitive constructivism indicate that learning is achieved when the learner is actively engaged in the creation of knowledge rather than passively receiving information. The role of the instructor and the learner are changing and the need to incorporate collaborative learning into instructional design methodology is fundamental to ensure educational success (Ben-Jacob and Levin, Eric, 1998). The Internet technologies offer the opportunity to improve on the traditional classroom, face-to-face instruction through increased communication, interactivity, and collaboration. Harasim (1990) summarized the characteristics of online courses as place and time independence, many-to-many communication, collaborative learning, and dependence on text-based communications to promote thoughtful and reflective commentary.

The idea of popularizing online distance learning certainly sets fire between conservatives and adventurists. Some people are cynical about marrying technology to education, such as David Noble (1998) who perceives the use of technology as automation of higher education effectuating digital diploma mills in which the quality of education will be drawn back by commercializing education.

Issues about online distance learning have been revealed in the literature. Lack of technological expertise on the part of both teachers and students (Wegner, Holloway, and Crader, 1997), resistance to change on the part of faculty (Parrot, 1995), student passivity (Filipczak, 1995), hardware limitations (Kerka, 1996), and learner isolation (Kubala, 1998) are but a few of the perceived drawbacks to distance learning.

On the other hand, pioneers in online distance learning obviously have much more positive opinions than their counterpart. For example, Vickie Phillips (1998) who has been teaching online since 1990 reflects her experience as following:

While my cyber-students do have textbooks, their books are learning aides -- not the only pool of knowledge they will drink from. Instead, they will drink also from the collaborative efforts of online debates, conferences, and papers. They will think about what they have to say, and they will come to class each week amazingly prepared to argue and type their way into insight ...They cannot sit passively in the back row twiddling their mental thumbs as the clock ticks away. They must think, and they must write. Thinking and writing: what else but these things are the hallmarks of a classically educated mind? ...I'm in favor of less learning that takes place on-campus and more learning that takes places in the minds of the participants ([online]).

As technology matures, computer programs can generate more personalized learning to distinguish what it is a learner knows and what he/she doesn't know, and learners can be taken through a course expeditiously. In other words, students can spend time on what they don't know and what they need to know, rather than on what they already know. Many students who have a fundamental knowledge of the basics can skip the basics, and the course content will provide only the instruction needed. Yet behind the scenes, all of the course content is there for any direction in which somebody might need to go. Everhart (as cited in Morrison, 1998) noted that asynchronous online learners become independent learners who think for themselves and figure things out for themselves. Such independent learning, obviously, is a contemporary educational objective.

After all the deliberations of trends and future-oriented online learning, will asynchronous online learning replace classroom at all? Clearly not, both ways have to be considered as complementary means! Increased flexibility and offering more choices and services to learners are basic advantages of integrating technology into education. Everhart (as cited in Morrison, 1998) illustrates that in the relatively near future, there will be a growing mix of virtual and residential learning. Many courses will be offered both, in the traditional classroom and in a virtual environment. Students may choose their suitable blend of these two environments they are about to learn in and which learning style better fits their goals and abilities in specific curriculum areas. Students living on campus (in residence halls) may attend some classes in person, but they also are able to take courses via Personal Computers in their rooms. Their choice will largely depend on criteria like how much they have already learned, to what extent the physical presence in a learner - teacher community fosters learners' appearances, on the specific area of study being covered, or on the skills to be achieved. Furthermore, almost every classroom will have multimedia delivery access available, so students and professors will be able to easily log on the Internet for information. Remote access in the classroom will support contact with and learning from various lecturers and experts.

Since technology, as a function and as a resource, has in fact entered the pedagogical mainstream of education, we are currently experiencing a steady process of evolution and change in integrating technology into education.

Although online distance learning extends access to learning opportunities to learners who otherwise might not be served, options that merely replicate or even magnify the problems and failures of traditional classrooms will not benefit learners (James & Gardner, 1995). Here,

Wiesenberg and Hutton (1996) identified three major challenges for the design of online distance learning concepts:

1. Increased time for delivery of the course (they estimate two or three times what is necessary for a traditional course),
2. Creating an on-line community, encouraging students to become independent learners.
3. Fewer interactions than expected from participants in an on-line course.

In addition, communication through computer-based means and media has the potential to change the way in which people behave, according to Lea and Spears (1991). They identified a change in informal and formal talk and individual's loss of identities and deindividulization via computers. Nevertheless, Tatar, Foster, and Bobrow (1991) argue that group work via the Internet is not just individuals working at computers at the same time, but it means giving participants the ability to judge when it is appropriate to overlap, just as they judge effectiveness of adding to verbal conversations. Group members need support to learn and act out their roles in these situations (Olson and Bly, 1991)

Gregard (1998) believes that designing instruction online and managing a distance-learning course also requires change of the mind-set. In many respects, the new teaching style resembles a seminar more than lecture-based learning. Although an instructor can provide leadership, guidance, and direction, students are far more autonomous. In most cases, this translates into greater emphasis on coaching and facilitation on the part of the instructor, being "a guide on the side" instead of a "sage on the stage". It also includes that instructors and content creators must adapt material to fit the online environment.

The marriage between distance education and information technology is set for the 21st century. But, concerns and obstacles regarding how to design instructional material online are

tremendous. This research will focus on how to design a well-reasoned online course that promotes dynamic, collaborative, and interactive virtual learning environments among learners, instructors, and internal as well as external resources. It will relate instructional methodologies to online distance education, compare differences and similarities of different online course design, and suggest improvements for robust instructional design delivered online.

Statement of the Problem

The problem of this empirical study was to determine the instructional design of ten selected online courses that meet the need of interactive and collaborative online learning based upon an assessment template outlining the three criteria classes: facilitating online learning, content presentation, and application of information and communication technology. The ten online courses used in this study were offered by four universities in the US, two in Wisconsin, one university in Maryland, and one educational group in Michigan; and one university from Canada.

Objectives

Derived from the above problem statement the objectives of this research focused on:

1. To determine the importance of online education in the upcoming knowledge age.
2. To create an assessment template for designing/evaluating online courses.
3. To study and compare the instructional design of the selected ten online courses guided by three criteria classes in the assessment template.
4. To identify highlights of instructional design among selected ten online courses.

Purpose of the Empirical Study

The particular purpose of the empirical study was to identify issues in designing online courses by comparing ten selected online classes based on assessment template designed by the

researcher and proved by the members of research committee. The second purpose was to portray the types of instructional design methods and technologies applied among these courses. The results of this study are possibly elucidating a set of criteria for enhancing the quality of online instructional design, and the quality of facilitating online distance learning.

Research Questions

This study sought to discover answers to the following questions:

1. What attributes are the fundamental requirements of a good practice of online course design?
2. What are the differences and similarities of the ten selected online courses with respect to the instructional design based upon the developed template?
3. What are the strength and weakness of instructional design among the selected online courses?

Justification of the Selected Population of the Study

Online education plays a key role in educational evolution in the 21st century. It follows the rapid advances of technology that changes our society to a knowledge-based economy. Combining information and communication technology with education has reached a scale and scope never established and thought of before. While academic institutions are rushing to get online, it is fundamental and critical to examine online course design issues that ensures quality, efficiency, and effectiveness of online learning.

However, careful research of a randomly selected population of online courses principally needs tremendous financial funds (e.g. course fee, registration fee) and time (e.g. courses not simultaneously available because of different academic calendar years among institutions). These funds as well as a wider time frame were not available for the study. Thus,

the results are limited. Yet, with the efforts and assistance of the members of the research committee, the researcher gained access to ten exclusively online delivered courses from ten instructors, and five institutions with no financial resources and within limit time frame.

By analyzing how to facilitate online learning, how to present instructional materials in an electronic format, and how to apply technology in e-learning, the result of this empirical study provides online instructional designer and facilitator a in-depth look on online instructional design, as well as a set of factual criteria for enhancing the quality of delivering courses online.

Limitations

The generalization of findings from this study is limited because of the following:

1. The population of the study was not selected by the typical randomization criteria to be applied for this type of an empirical study.
2. The assessment template developed and used to gather data was not validated for content.
3. The applied scoring and its bandwidth may be influenced by the evaluator's experience and formal knowledge in instructional design
4. The evaluation was based only on the content materials and design formalities available in the course online.

Assumptions

The following assumptions are made:

1. The researcher evaluated the criteria list against a given online course properly, accurately, and without personal bias to researcher's best knowledge.

Definitions of Terms

The following terms were used in this study:

Asynchronous Learning. Asynchronous learning is interactive instruction without the interaction between student and teacher occurring at the same time. The advantage of asynchronous delivery includes student choice of location and time. Students may choose their own instructional time frame and gather learning materials according to their schedule (Steiner, 1995).

Collaborative Learning Environment. In collaborative learning, instruction is learner-centered rather than teacher-centered and knowledge is viewed as a social construct, facilitated by peer interaction, evaluation and cooperation. Therefore, the role of the teacher changes from transferring knowledge to students (the "sage on the stage") to being a facilitator in the students' construction of their own knowledge (the "guide on the side"). Some examples of collaborative learning activities are seminar-style presentations and discussions, debates, group projects, simulation and role-playing exercises, and collaborative composition of essays, exam questions, stories or research plans (Hiltz & Turoff, 1993).

Distance Education. Distance education is instructional delivery that does not constrain the student to be physically in the same location as the instructor. The use of educational media unites teacher and learner and carry course content. (Steiner, 1995)

Globalization. Globalization is the process in which distance becomes less a factor in the establishment and sustenance of border crossing, long distance economic, political and socio-cultural relations. It is an abstract concept that refers to Americanization, the growing importance of the world market, and is used to describe a cultural or ideological reality. Globalization involves political, economic and socio-cultural changes and is seen as a dialectal dynamic (Lubbers, 1998).

Instructional Design. Instructional Design is the systematic process of translating general principles of learning and instruction into plans for instructional materials and learning. Instructional design as reality can start at any point in the design process. Often a glimmer of an idea is developed to give the core of an instruction situation. By the time the entire process is done the designer looks back and checks to see that all parts of the "science" have been taken into account. Then the entire process is written up as if it occurred in a systematic fashion (Smith & Ragan, 1993).

Summary

In conclusion, online asynchronous learning and teaching compliments classroom education methodology to serve the need of lifelong learners as well as collaborative learning in the 21st century. Yet, it is premature to talk about the electronic revolution in the educational arena because most learners, educators, and institutions are still at the adopting stage of the underlying and defining information and communication technologies. In addition, as the integration of new technologies with innovative learning concepts evolves, there are more obstacles to study and overcome in order to build an effective and dynamic online learning community.

This chapter outlined a multiplicity of needs for researching design issues of online courses. The research objectives were stated and relevant terms were defined. The assumptions and limitations of the study were clarified.

The upcoming chapter II will be a review of literature. Chapter III contains a discussion of the methods and procedures applied in this study. The results of the empirical work are presented in Chapter IV. Finally, Chapter V provides a summary, conclusion, and recommendations for further study.

CHAPTER TWO

REVIEW OF LITERATURE

Under the dawn of 21st, as a result of increasing global competition, economic development, and the amazing speed of improvements and advancements in information and communication technology, the knowledge cycle is shortened; therefore, learning becomes a lifelong requirement to for people to survive in this knowledge age.

It is a revolution that Internet users can communicate their ideas to each other through e-mail, on-line conferencing, and World Wide Web anytime anyplace. Combining a global, Omni-directional communications network with the information processing power of computer, Internet is reshaping our economic life, at the same time, it is creating a complete new way of thinking.

This astonishing growth, coupled with the unique capabilities of the Internet has captured the attention of educators (Berthon, Leyland, Pitt, & Watson, 1996). Internet and the World Wide Web have been growing at a phenomenal pace. The next generation of entrants to learning environment is going to be both well aware of its existence and information technology (IT) confident, well beyond basic IT literacy. They are going to demand access to it and they will be highly motivated to explore and discover the breadth of information it contains. This challenges the education sector and the instructors. They have two choices: either being left in the dust, or to learn what is available on it and adjust their approach to learning and teaching in the light of the possibilities that it offers.

The review of literature was divided into the following sections that provides background knowledge on:

1. The Growth of the Internet and the World Wide Web

2. The Re-Emerge of Lifelong learning
3. Online Learning – One Solution to the Demand of Lifelong Learning
4. Advantages of Asynchronous Learning
5. Classification of Learning Styles and Distance Learning
6. Multiple Intelligence and Online Learning
7. Learning Theories and Online Instructional Design
8. The Need for Rethinking Online Instruction Design

The Growth of the Internet and WWW

The revolution in telecommunication technologies has fostered the rapid growth of the Internet all over the world. The Internet is a massive global network comprising many national and international networks of interconnected computers (Rao & Natesan 1996; Hoffman & Novak 1996). It connects more than 30, 000 networks of 12.9 million host computers globally (Frost & Stauss, 1997). At least 100 million people logged onto the Internet in 1997, up from 40 million the year before, and as many as 1 billion people are expected to tap into the World Wide Web by the year 2005 (Ingersoll, 1998). Although the Internet is U.S. -centric, with 73% of users from the United States, the fastest growth is happening in other parts of the world, particularly the Pacific Rim (Frost & Stauss 1997). With more than 130 countries hooked up to the Internet (Donlan, 1994) and the number of users doubling every year, the Internet is the fastest growing telecommunication system ever – even including the telephone system (Miller, 1993).

People are amazed how current Internet version 1.5 can reshape the society. However, Werbach (1999) predicts that “Internet version 2.0 will be an always-on multi-megabit network, capable of supporting voice and video streams in addition to data all the way to the end-user” (p. 2). This means the next-generation Net will deliver that bandwidth to the home.

World Wide Web (WWW) is an add-on technology on the top of Internet. www.com represents a new concept in technology, the library on your desktop, the dictionary at your fingertips, the sound at your ear. Virtually everything can be accessible through the WWW. Comparing to laser discs and CD-ROMs, the Web has the added advantage of being free (virtually) and not restricted to the amount that can be squeezed onto one CD, or even a lorry load of CDs (Sangster, 1995).

The Internet and its user-friendly counterpart the World Wide Web permits inexpensive, global, interactive, mass-computer communication. Acceptance and usage of the Internet is so phenomenal that many experts are having difficulty in monitoring its growth. Estimates of Internet users are as high as 35 million in the United States (Maddox and Mehta, 1997).

Take look at the Web, developed at the European Particle Physics Laboratory in Geneva, Switzerland, in 1991, was intended as a means for physicists to share papers and data easily (McChesney, 1996). The tool provided a way to link textual information on different computers and created by different scientists. The object was to overcome issues of incompatibility and utilize a new way of linking made possible by computers, called "hypertext". "Rather than presenting information in a linear or hierarchical fashion, hypertext permits information to be linked in a web-like structure. Nodes of information can be linked to other nodes of information in multiple ways. As a result, users can dynamically criss-cross the information web using pieces in the order most convenient to them. This project resulted in an innovative front-end to the Internet, now referred to as the World Wide Web" (Ackermann, 1996, [online]). Today, it provides access to a previously unimaginable range of information. According to Newhagen and Rafaeli (1996), the Internet's capacity for addressing the human senses far surpasses that of any

other medium. Text, voice, pictures, animation, video, virtual reality motion codes, and even smell are already being conveyed on the network.

What is the real benefit of all this to learners and educators? By providing more flexible and fast access to information throughout the world, Internet and the WWW have made the Internet a user-friendly environment. The ability to integrate graphics, text, and sound into a single tool means that novice users do not have to struggle with such a steep learning curve. In addition, numerous organizations and individuals have their own web enabled home pages, which is an added-value for learners to search information and resources on the web. More exciting is that bandwidth is being added constantly at the core of the core of the network, and projects such as Internet 2 are building high-speed IP networks for research and academic uses (Werbach, 1999).

The Re-Emerge of Lifelong Learning

Hake (1999) states that lifelong learning has re-emerged as one of the hottest topics in public discussion about education and training for learners in the 21st century. Governments of industrialized countries have already put effort to get people back to the habit of learning. Hake (1999) further presents examples, such as Japanese government, which first recognized the need of lifelong learning ten years ago, and they have established the Promotion of Lifelong Learning Law and a National Lifelong Learning Council since 1990. Then, the European Union marked themselves as a key player by designating £9 million package of funding for the development of Lifelong Learning Development Plans for 1999-2000 launched in 1998.

In the United States of America, in 1994, American government has already made a call to public attention on lifelong learning. School-to-Work Opportunities Act, signed by President Clinton initiated programs offering youth and adults lifelong learning opportunities (The U.S.

Department of Education., 1997). Canadian governmental Information Advisory Council published its final proposal titled “Preparing Canada for a Digital World” in 1997 (Industry Canada, 1997). It particularly emphasized importance of lifelong learning as essential for Canadians who are living in a knowledge economy and society in which finding and keeping jobs will depend on access to learning opportunities to upgrade skills and knowledge throughout their lifetimes.

British government issued its green paper on lifelong learning in 1998 because it regards the 21st century as a “learning age” that is about equipping people with vital IT skills, and creating a society where all people can learn, develop themselves and be prepared to adapt to changes both in society and in the workplace (Crofts, 1998). It set out the Government's vision for a learning society and a comprehensive set of proposals for lifelong learning for all. “There were about 3,000 thoughtful and constructive responses to the Green Paper from a wide range of interests, including some 2,000 from members of the public. The overwhelming majority of these responses was very positive” (p.12).

Governments have acknowledged the importance of life-long learning for all, at the same time, for individuals life-long learning is not optional but essential. Each person has to adjust to this “learning age” by adopting learning as a lifelong endeavor. Winner (as cited in Miller, 1996) points out:

Today, corporations demand flexibility and rapid turnover, business gurus urge enterprises to stay on the edge of chaos, and to creatively confront the challenge of each day's profit-making opportunities ...People are judged by nearly minute-to-minute calculations of their value in the marketplace and sent packing if someone finds their productivity inadequate (p. 13).

To survive under such competitive era, Miller (1996) insists that people have to be life-long learners, constantly upgrading human capital in order to retain the competitive edge in the job market. Hake (1999) also argues that lifelong learning becomes the necessary condition of survival in continuing development of modern society. He advised that people have to learn – as societies, organizations and individuals – to survive in the lifelong learning society which is our today" rather than somebody else's tomorrow. Hagevik (1998) suggests that individuals adopt a life-long learning philosophy, also, “instead of a static career, expect a changing portfolio of jobs in stead of a static career, each building skills useful in your next endeavor. Instead of compliance to the old order (or disorder), expect innovation and resilience under conditions of ambiguity. (p. 33). “Lifelong learning is a way for the rest of us to do what good teachers have always done--remain open to new ideas and explore the new worlds that those ideas reveal” (Miller, 1996, p. 13).

The pondering question is why now? Why lifelong learning has been such an issue since 1990s? Scholars answered the question from two aspects, the changing economical/social infrastructure, and the global access to information technology that shorten the knowledge cycle.

Davis (1996) explains that every time the infrastructure changes, everything in the economy and the society follows it. He reveals that the church and the family were the major educating institutions when the society was under an agrarian infrastructure. Then, the industrial revolution set the foundation of an industrial infrastructure, over a period of 100 years, a slow, gradual shift in education from church to state, with government emerging as the major educating institution, and continuing till today. Yet the 21st century is no longer an industrial economy, the information technology is transforming society to a knowledge-based

infrastructure. So once again the education paradigm built on a past economical and social infrastructure is no longer serves the need of work force.

Secondly, lifelong learning is also a result of shorten knowledge cycle caused by global access to communication and knowledge. Giddens (1991) believes that globalization is characterized by the emergence of instantaneous communication without regard to national borders and the subsequent availability of knowledge irrespective of space and time. New information and communication technologies mean that people can learn at any one moment in time from sources of knowledge anywhere on the globe. Giddens (1991) further argues that the increasing availability of knowledge is reforming the social life by so-called "detraditionalization". By detraditionalization, distant sources of information may exert more influence upon our behavior than traditional sources associated with the nation, region, or locality.

Finke (2000) also addresses that one driven force causes constantly updating knowledge is that the high bandwidth networks are available at decreasing cost due to advances in communication technology; and Personal Computers with the Internet connections are becoming low cost household commodities in more and more countries. This provides globalization of access to communication and knowledge, particularly via Internet and the World Wide Web, which fosters knowledge to age faster and quicker than ever (Hake, 1999).

Therefore, 50-75% of the work force has to be involved in lifelong learning one way or another (Finke, 2000). Dr. Valery Kanevsky, Senior Consultant of Hewlett PackardHP Labs, believes that knowledge is the fundamental building material of a modern corporation, and the engine of wealth in the 'third wave' is creation, and utilization of knowledge (Kanevsky & Housel, 2000). Because of increasing global competition, and advances in technology, "the

knowledge cycle, from creating to learning to utilization becomes ever shorter: phases of the process tend to become almost simultaneous” (Finke, 2000, p. 3). According to Davis (1996) the time-value of what a person learns is getting shorter and shorter. The speed of changes urges people to upgrade their education throughout their life cycle.

Long before, Chute and Hancock and Balthazar (1991) has already stated that lifelong learning becomes essential in knowledge domain fields. Especially for technical knowledge, it has a “half-life of 3-5 years or complete obsolesce after 6-10 years” (Finke, 2000, p. 5). Davis (1996) expresses the same notion that half of what an engineer learns as a freshman is effectively obsolete by the time the person graduates from college and enters the labor force. Ahn (1999) holds the same view by articulating examples in a variety of professions – as information technology professionals, the career advancement demands IT education and training constantly because of the increasing use and rapid advancements of technology in the work force. For service professionals, such as accounting, law, insurance, the hospitality and tourism industries, are required to renew their licenses for keeping up with the current. In other industries, employees need introductory or refresher training in information and communication technologies as its prevalence in business and the short life cycle of applications.

Hake (1999) believes that 21st century is characterized by learning challenges and their highly developed commitment to learning. The necessity of lifelong learning is a structural requirement of this new learning age.

Online Distance Learning – One Solution to the Demand of Lifelong Learning

In the knowledge age, for sure, learning will no longer be limited to classroom learning. It will be a lifelong experience associated with work and personal life. There is a huge demand on offering lifelong learning opportunities today. Bates(1995) estimated that in Canada “a

person will need to retrain at least five times in a working lifetime” and “ the capacity of current education and training market, public and private, needs to be doubled” ([online]). The similar estimation in the U.S. was stated by Dolence and Norris (as cited in Finke, 2000), “demands in the US alone can translate into the full-time equivalent enrollment of one-seventh of the work force at any point in time...to meet the full potential demand by the year 2010...a new campus would have to be opened every eight days” (p. 5).

Rodeny Everhart was Senior Vice President of Bellcore, one of the world’s largest telecommunication software and services companies. He (Morrison, 1998) concludes that traditional institutions and education paradigm can hardly accommodate the hungry of learning needs generated by younger students and the workforce for the number of learners will double the number of learning hours needed by the total learning population. The reason of such a huge body of learning population is because the clientele of education and training organizations will expand from 16 years old to 67 years old as lifelong learning is essential for a knowledge-based economy (Green, 1999). Therefore, to deliver instruction in a traditional sense to that entire population would require doubling the number of campuses, classrooms, and professors, and financial resources (Morrison, 1998). In another word, colleges and universities have to open 7 days a week and 24 hours a day and this may still not enough for the market demands. No body has prepared for this mass learning and teaching need yet; no economic plan could fund it, no land space is available for doubling the campus spaces, and no enough available professors or educational support staff for this kind of solution.

Then, what are the possible, feasible, and applicable solutions today? Green (1999) argues that whenever scholars search the role of technology in academic world, they should realize that there are always abundant hopes in and around education associated with new

technologies. The evidence can be viewed through history. Nearly a century ago, Thomas Edison invented filming technology, and he believed that film would replace books as resources for instruction. The fact was that film was used as a propaganda and training tool during World War II. Later on, during the late 1950s, New Science movement consequently brought film and educational television program into American classroom, and today, there is the controversial presence of Channel 1 in thousands of high schools across the United States (Green, 1999).

Now, it is time to turn to technology again. As we are entering the 21st century, we are again witnessing a significant evolutionary event in higher education in the knowledge-based infrastructure, fostered by the information and communication technologies (Green, 1999).

The Information Highway, the Internet and WWW, plays an important role in changes of society — as cause, effect and potential solution (Industry Canada, 1997). Everhart (Morrison, 1998) rationalizes that in a knowledge-base society, just in the US, there are approximately “141 million knowledge workers who must refresh their skills with formal education on a continual basis—then approximately half of all instruction just has to be delivered as virtual, or “connected” learning (by computer and the Internet in a remote location from learners) ... Instruction has to be leveraged, and virtual delivery is a great way to achieve that leverage.” ([Online]). Lifelong learning speeds up reinvention of education and training, the most practical and obvious solution is online distance learning and teaching. (Finke. 2000).

The raising of online distance learning brings hope and evolution to learning environment. Yet, distance learning is not new to the college experience. James and Gardner (1995) elaborate Garrison’s (1989) model of three generations of distance learning to four generations model. Generation one of distance learning, correspondence courses dated back to 1840 or maybe even earlier (Phillips, 1998). It relied on printing materials. Generation two was

audio and video teleconferencing courses associated with broadcasting and television. Computer-based instruction, a more sophisticated technology, was the third generation of distance learning. The fourth generation of distance learning, Net-based teaching and learning is brought with exploding development of information and communication technology, particularly the Internet and WWW.

Technology opens a new world to learners and it forces educators to rethink the instructional methodologies as well as the content, costs, and delivery of distance education. Technology, more important, challenges institutions' missions – teaching and research, services, and certifications. Green (1999) concludes that the technology breaks the boundaries that traditionally separated content (teaching and researching), context (providing services), and certification as following:

1. Technology brings and expands new, rich resources to the learning of content
2. It creates new contexts for interaction as well as communications between and among instructors and learners, also, learners to learners, and learners to outside experts
3. Technology can fundamentally change the way students and institutions approach assessment and certification.

The age of the virtual university has arrived as the new technology, specifically Internet and the World Wide Web, offers increased possibilities for lifelong learning. Technology, a buzz word of today, has broadened the choices of learners. Under the light of information and communication technology, it is making the promise of accessible, applicable, interactive, and collaborative virtual learning environment possible (Kautzman. 2000). No longer are learners necessarily required to come to physical locations to obtain an education or training. With the

technologies, the education and training comes to learners who are freed from the time and space constraints of the traditional classroom (Vachris and Bredon, 1999).

Information technology speeds up knowledge cycle, creates a virtual learning community, extends resources, as well as presents another way of learning – asynchronous learning. Fortunately, people from governments to colleges and universities to industries to individuals are taking actions to apply the technology, specifically computers, the Internet/World Wide Web, to lifelong learning and teaching.

Action from Governments and Academic Institutions. Governments, especially in industrialized countries, are integrating technology in lifelong education as their national strategy. . In American President, Bill Clinton’s call to Action for American Education in the 21st Century (The U.S. Department of Education, 1997), he stated:

Just as 100 years ago the nation struggled with the transition from an agrarian to an industrial economy, today we confront the transition from an industrial to a global, technological economy. Technology--the World Wide Web, computer-aided design, word processing, data processing, electronic transfers--has become an engine of our economic growth and has fundamentally changed the ways we learn, how we do business ... with computers, students can learn at their own pace and practice as much as they need to and using technology, quality software and good teachers, students can also learn differently” ([online]).

The Canadian government has already been operating several programs using information technology to support lifelong learning. For example, the Office of Learning Technologies at Human Resources Development Canada (Industry Canada, 1997) is working with partners to:

1. Expand innovative learning opportunities through technologies; promote effective use of learning technologies;
2. Support assessment, research and testing related to the use of learning technologies;
3. Increase the availability and sharing of knowledge and quality information about learning technologies

In UK government's green paper on lifelong learning, it points out that the learning age was about equipping people with vital information and communication technology skills (Crofts, 1998). Selwyn and Gorard (1999) emphasize that the main tenets of the UK government's drive are to apply information and communication technology (e.g. Internet and WWW, computers) to facilitate easy access to lifelong learning.

The academic world, especially in the United States of American, is adjusting to virtual learning rapidly. Online virtual universities and colleges are booming during last couples of years. Kirk and Bartelstein (1999) express that colleges and universities are jumping on the virtual bandwagon. Based on their statistics there are 85 percent of 'traditional' colleges and universities either offered, or would soon offer, distance-accessible courses, even including Harvard University (Kautzman, 2000). Duke University sets the bar of virtual Global Executive MBA degree at a cost of \$85, 000 with a hand-picked class of mostly international business people. (Otchet, 1998).

Already, U.S. colleges and universities offer over 6,000 accredited courses on the Web (Becker, 1999). And there is more explicit report about how fast the American education institutions adopt information and communication technology, as a function and at the same time, a resource, for distance learning and teaching. In the ninth national survey of desktop

computing and information technology at 1,623 U.S. colleges and universities, Green (1999) reports the following, as of fall 1998:

1. More than two-fifths of college courses used e-mail, while fully a third of college courses drew on content from the Web
2. More than 40 percent of the American colleges had some sort of computer literacy or computer competency requirement
3. Over 60 percent of public four-year institutions had a mandatory information technology fee
4. More than three-fourths of the two- and four-year colleges had IT support centers to assist faculty with instructional integration; and
5. Almost half of the American's colleges had a formal plan to use the Internet for marketing the institution to prospective students; more than half had some portion of the undergraduate application available to prospective students on the Web

Action from the Industries. Evidently, the Internet/Web-based education and training represent a new and growing trend in the corporate environment, where the primary objective is cost-effective, and efficient acquisition of specific skill and knowledge units (Tweney, 1999). Lower travel costs and expenses and the convenience to employees are drawing more companies into the online training and education arena.

Corporations are investing impressive sums of money into the Internet-based training. According to the International Data Corp. (Dugan, 1998), the Internet-based training market ballooned between 1996 and 1997 from \$2 million to \$91 million. By 2000, the Internet-based training will become a \$1.04 billion juggernaut. In addition, the American Society for Training and Development reported (Mottl, 1998) the number of companies using the Internet-based

training jumped 345 percent between 1994 and 1996, compared with a 17 percent increase in computer-based training and only 3 percent in typical classroom training, which is still dominant for training initiatives. "Anytime, anywhere" availability as well as the growing prevalence of computer networks at work and home are the dominant reasons for companies to adapt the Internet training. For example, the Complete Business Solutions Inc., a systems integrator, have used online training since 1997. More than 200 employees have taken some 400 online courses in the past year (Mottl, 1998). Natesan and Smith (1998) also point out that the global corporations with worldwide operations are using the Internet technology to unite their employees. They are using company-wide electronic bulletin boards to enable employee collaboration and to disseminate knowledge of best practices. Discussion groups using experts located around the world are initiated to tackle specific problems. The international employees, therefore, will be trained in the use of the Internet for mass communication.

What will this mean for one of the main sectors of service industry – the hospitality industry? Will hotel chains, corporations, and restaurants also be conducting education and training with a kind of Internet sophistication? The answer is an absolute affirmative. Hotel trainers, like their colleagues in other fields, have been quick to sense the potential of the Internet to change every aspect of their practice in training their employees. On April 23, 1998, Cendant Corporation launched an Internet training program, which “brings training to 5,800 properties across eight lodging brands through its Project PowerUp program” (Foley, 1998, p 27).

Cendant is certainly taking an historic lead in advancing the training process, meanwhile, other hotel companies also see the challenges, and they are posturing to move toward to the 21st century. Marriott International, for example, "uses its website to prepare human resources managers for accreditation. Managers sign up for training on the Internet and use Marriott's

website to access pre-test, training modules, and post-tests from the Society for Human Resources Management" (Foley, 1998, p26).

Currently, the proportion of Internet training in the hospitality industry is relative small, but it has a bright future. A survey conducted by the American Hotel and Motel Association (Kennedy, 1998) found out the following:

Only 4.1% hotels among nearly 950 major branded properties are using the Internet for training while 45% hotels are using CD-ROM technology for employee training ... 4.1%" is definitely going to increase dizzyingly as more hotels discover the greatly improved accessibility, cost-effectiveness, and collaborate of on-line training. A significant proportion of the properties that don't currently have CD-ROM will most likely skip over this technology and go straight to web-based training (p. 28).

Marrying the Internet/World Wide Web with learning has generated a global knowledge-based learning environment, which had never become a reality in human history. Online distance learning and teaching certainly challenges the old paradigm of one-to-many classroom teaching and learning because it offers lifelong learning opportunity with its uniqueness in convenient accessibility, learning flexibility, cost effectiveness, and global knowledge collaboration.

Advantages of Online Asynchronous Learning

Rapidly changing environment is one of the main characters of the 21st century, which is increasingly based within the context of a global knowledge-based economy. Hanna (1998) argues that under such an environment the education and training world is facing challenges of growing demand among learners for improved accessibility and convenience, lower costs, and direct application of content to work settings. With computers and global networks becoming ubiquitous, the Internet/Web-based learning environment provides a solution to that demand.

Online courses delivered via Internet and the World Wide Web have a number of built-in benefits to learners compared to traditional courses: “anytime, anyplace” convenient accessibility and flexibility to knowledge, lower costs, and learning environment with richer cross-cultural and international collaborations.

Accessibility and Flexibility. The obvious advantages of online courses is the "anytime, anywhere" aspects that allows learners to access the learning content at their convenience. That flexibility provided by technology has allowed education and training to be an on-demand, year-round, 24-7 activity (Ahn, 1999). Becker (1999) reinforces that Web-based learning environment allows greater time flexibility for students to interact with course materials, chat with other students online, take quizzes, and submit written papers. People with full-time jobs can choose the most convenient time to do their coursework: during weekends, before work, or after. Freed from time and place makes online courses uniquely reach new audiences, utilize new teachers, and tailor instruction to specialized groups.

Students also confirm the convenience of online learning. They are learning by interacting with their instructor and peers immediately rather than in the next class or waiting for a test. Students learn without time and place constraints and without the fear of gender, racial, age, or disability bias (Stage, Muller, Kinzie, & Simmons, 1998). Hopkins (Thornton, 1999) recalled that she could not attend the traditional on-campus study because her daughter needs her at home. So, she enrolled in an online-studies program offered by the University of Phoenix. In December 1998, after two and a half years of study over the Internet, Hopkins received her MBA degree and joined Prudential Securities as a financial advisor in training. "Getting a degree online was a wonderful experience," Hopkins mentioned, "It was a rigorous, high-quality program, with very, very sharp instructors."(p. 41). Tim Meyer (McCartney, 1996) has the same

experience. He chose to be an online student because he had a tough work schedule with a lot of travel as a manufacturing manager whose responsibilities include systems management at pharmaceutical manufacturer. As a student in the online MBA/technology-management program, "I can log on to the Internet when I get home at night, even when I'm on the road, and do assignments when it's convenient" (p. 35).

Flexibility is one strong point of Net-based learning that has over the traditional classroom. It allows professionals, who don't have time to waste, to actually spend time on learning instead of fighting rush-hour traffic.

Not only do you learn when you have the time, but also you can go as fast or as slow as you need. The classroom is at learners' disposal 24 hours a day, 7 days a week, on the contrary, online students have more control over virtually every aspect of their own learning experience when the school comes to students (Clarker, 1999). Because in general, most online degree programs utilize bulletin board systems, net meeting, chat rooms and e-mail to hold class, do assignments and communicate with classmates and professors.

The revolutionized Internet learning environment provides extraordinary convenience and flexibility, allowing busy, mobile hotel professionals to engage in learning as they wish as long as they have an access to computer and the Internet. Richard Bell-Irving (Foley, 1998), vice president of worldwide lodging human resources for Marriott International, believes that the flexibility to access the website from any locations is one of the major benefits of web-based training. "The convenience is very attractive," said Gail Gross (Mottl, 1998), an accounting director, "The online class was great since I didn't have to juggle things at work. In the past, attending classes meant being away from the office and sometimes away from home for up to a week" (p. 35). Finding time to leave home or work to learn new skills and gain additional

knowledge is becoming more and more difficult in any industries, including hospitality industry, today. However, through the Internet, training and education is possible wherever and whenever the need arises.

Cost effectiveness. Another attraction of Web-based education and training: It's relatively inexpensive. Whenever we talk about the cost effectiveness of the online learning, it is first associated with the value of the time spent on the whole learning process. Time is money, a contemporary truth in any type of investment theory, including learning – investment in human capital. Because of the advances of Internet and the WWW, minimizing the physical distance between learners and learning facilitator, convenient accessibility reducing the physical commuting and traveling time. Therefore, the time spent on reaching the knowledge is shortened in which simultaneously decreases the principal cost of investment in human capita for learning (Becker, 1999).

This is especially true in knowledge advancement for executives and highly skilled employees. Cost is another reason why corporations are quick to embrace online training programs. Put a technical person through a training program can be a very expensive proposition, for example, a typical three-day course costs as much as \$1,800, plus travel expenses. For a consulting company, it will lose \$1,500 or more a day in billable time that the technician would normally bring in (McCartney, 1996).

In additional, with significant reduced cost, Web-based learning programs can be distribute electronically all over the world; changes can be made at any time; and learning results is electronically centralized and tracked. All of this drives many organizations to make the initial investment on Web-based training.

For instance, Elizabeth Dalton (Boisver, 2000), a program manager at Sun Microsystems prepared a Web-based training program for 6,000 people, and she ensured the cost effectiveness of a Web-based training. In Ms. Dalton's words that online training is "more easily duplicable, distributable, updatable, trackable, and doable at any time." (p.36). She also estimated that the company would have spent at least double amount of \$750, 000 over the next two years if they had chosen the option of a traditional training 'road show'. Because sometime later new information and training materials would come out and the whole series of classroom training sessions would have to be done again. But this can be changed centrally on the computer server almost immediately.

An economical infrastructure reduces learning costs. The value of web-based education and training is obvious to organizations. Sending employees to classes costs a lot in time and money. But bringing the class to the employee reduces overall training costs by 15 percent to 50 percent. In addition, classroom training also takes workers away from jobs, slowing critical projects. Additionally, at least in principle, companies could use the same online tools to disseminate product information and training to the customers (Kreitzberg, 1998).

The hospitality industry certainly seizes the economic benefit of Web-based education and training as well. One hotel company mentioned it would save up to US\$7.5 million in printing and distribution costs by accessing training materials via the Internet (Kennedy, 1998). As hotel corporations grow internationally, delivering the training programs to employees around the world at the same standards becomes more and more difficult economically and geographically. The Internet training will certainly reduce travel time, save a big fortune of the company, and increase the applicability of learning to the individual's needs and immediate situation (Foley, 1998). The Holiday Inn Group finds interactive programs delivered over the

Internet meet its criteria for delivering cost-effective, onsite training and in a manner that appeals to a culturally diverse workforce.

The online learning creates a win-win situation for both the employee and the employer. Mayo, earned a Web-based MBA degree from the Duke University and reimbursed totally by his company, explained that “the company liked the distance (web-based) format because they didn't have to wait to see a return on their investment... because I was still working, I could put what I was learning into practical use right away “ (Clarker, 1999, p. 116).

Certainly, not everyone can afford \$8k tuition from Duke University, but by thinking about most companies, 90% in the US, reimburse tuition will release the attention a bit. In addition, the cost range of the online courses majority depends on the type of courses, degrees and schools and degrees For online M.B.A. degrees, a domain degrees offered on the web, can reach as much as \$85, 000 from the Duke University to as economic as \$5,000 from Andrew Jackson University in Birmingham, Alabama (Clarker, 1999).

Above all, the Internet/Web-based education and training opens up a means of communication that is cost effective comparing to traditional delivery: no commuting time, no suffering the loss of salary due to relocation in order to complete courses; no paper or printing costs, no bulk mailing fees, no expensive travel or inter-company meetings, etc.. Therefore, whoever seizes the reins and learn to manipulate the electronic media will get noticed.

Collaborative and Interactive Learning. From lifelong learning perspective, there are the anticipated increases in enrollment and expenditures, the decreases in funding, and the changing learners composition has resulted in educational institutions and organizations seeking partnerships and collaborative relationships to address future challenges. The information and communication technologies offer possibilities for such collaboration regardless time and

physical constrains. Via Internet and the World Wide Web, these collaborative relationships afford opportunities to utilize distributed resources extending the learning environments to encompass multiple campuses, libraries, equipment and laboratories, technical expertise and human resources (Rice, McBride, & Davis, 1998).

Online collaboration is the sweet spot of the whole online experience with the ability to make connections with diverse ideas and people, further, to create new context, new relationships, and new networks world wide. Learners will learn and they will learn from others (Logan, 2000). This exposes learners to many of the challenges they're likely to confront in the real world. For example, Texas Christian University (McCartney, 1996), in conjunction with eight other schools in the United States, Canada, Europe, and Australia, established a Virtual Learning Environment project for English-speaking MBA students. Students came from different disciplines--including information system, marketing, and organizational behavior as well as from different countries. Such diversified combination could hardly achieved by the traditional classroom MBA programs. "As a result, in working together as virtual teammates to create a Web-based project, students were exposed to different disciplines, different cultures, and certainly, different perceptions" (p. 36).

Another example, in the University of Phoenix (McCartney, 1996), students like the fact that the school bases its online programs in real-world experience. "We work closely with a number of corporations such as AT&T and US West," Hedegaard explained, "Their representatives have input into our programs. In addition, our instructors have work experience--they're not just academics" (p. 34). In fact, many of the instructors come from industries that use online connections

Collaboration of online courses started from e-mail messages and Web, to today's increasing use of "chat rooms", conferencing (Zuboff, 1998). It becomes possible to access, utilize, and collaborate with a combination of experts and peers anytime, anywhere. By using electronic media, the Internet education and training offers the potential to be more than just a correspondence course. Webster and Hacklery (1997) states that online learning can train students in the very technology that is providing the competitive advantage for global corporations and at the same time allow them to build international knowledge communities. Learning communities are developed in which students can gather, express, and exchange ideas and thoughts; receive just-in-time access to help; and engender their intrinsic needs for autonomy with affiliation" (Stage, Muller, Kinzie, & Simmons, 1998). This view is shared by Berger(1999) as well. As an online instructor, Berger, an instructor of the online Master Business Administration program of University of Colorado had students from Hong Kong; Germany; Canada; Singapore; the United States, including Hawaii; the United Kingdom; and Italy. Students brought a broad range of experiences and expertise to the class from firsthand experience of the World Trade Center bombing, to serving as an intern in the White House; from human resource directors to executives. Students benefit from creating an international network of professionals with similar interests, and they even formed support systems within the course.

Berger (1999), as an instructor, personally satisfied with the online learning community as well because he was able to facilitate these kinds of interactions has made distance learning not seem distant at all but, in fact, rather close and personal.

Another strength of the online learning is the personalized interactivity over the Internet and WWW. Every person on the network is both a user and a resource, which is crucial to the power of – an interactive learning community that is not limited by time, place or the constraints

of a classroom (Mayadas, 1997). Through the real time "conversation" over the Net, chat rooms via the web, they can hold video conferencing sessions with experts worldwide. This sense of original work empowers students in a meaningful way. Students reported that electronic communication freed them to be more revealing and to participate more than in the typical classroom setting (Berger, 1999).

Asynchronous interactivity is one of the major distance education approach. E-mail, Internet bulletin boards, chat room, computer conferencing, groupware, and software-generated simulation connects both dynamic and static resources without time and place limitation. (Mayadas, 1997). By properly implementing the information and communication technologies to foster interactivity, the Internet-based distance education environment can reduce or overcome the problem of social distance between learners and instructors, not just geographical distance (Nipper, 1989). For example, Everhart (as cited in Morrison, 1998) observes that the more introverted students tend to communicate better in written form than verbal, and they tend to compete on a more equal intellectual footing. Thus, they become more involved in a digitized discussion threads or chatrooms than they do when faced with potentially intimidating and more exuberant peers in the classroom

Educators are recognizing that the information and communication technology enhances the degree of learning at a speed and scope never before possible. In the traditional classroom setting, learning programs get delivered to each learners in the same way: the same lecture, the same answers to questions asked, the same written handouts, little or none interactions between students and the teacher. Schrum (1998) argues that in traditional courses, potentially, learners can interact in three ways: with the content, the instructor, and the other learners. Yet many traditional courses center on lecture and note taking.

On the contrary, the on-line learning environment offers possibilities for broadening interaction, and its differences from classroom teaching have compelled many instructors to explore these possibilities. In addition, the Internet learning offers individualized interactivity--a whole new paradigm in learning. Learners can interact with content, in a variety of ways. The instructor and each student are likely to develop their own style of interaction. So, there's no sitting in the back of the electronic classroom, and every student has to participate. (McCartney, 1996). From an instructor's point of view, Berger (1999) found that there were more personal dialogue with students, at the same time, the intimacy of dialogues was to be much greater with the anonymity of Web-based instruction than in a typical classroom setting. This kind of interaction is one of the striking benefits of online education.

In addition, interactive and collaborative online learning environment is one way to ensure the learner's input dictates the next step in the course, or pulls up information specific to so that courses meet the educational needs of each individual user (Cook, 1995).

Laurillard (1993) also describes four ways of supporting interaction with learners in an electronic environment. These include a reliance on discursive language to understand each other's conceptions; adaptiveness, so that the focus can shift as the trainees' needs shift; frequent activities that allow learners to demonstrate their understandings; and recurrent reflection on the students' work.

The capabilities of the online learning make academic institutions and industries to come closer to provide a collaborative learning and teaching, and professional development environment for lifelong learners.

Classification of Learning Styles and Distance Learning

We see technology can really make a difference in learning and learning environment, however, it remains as a tool to enhance and expand access to knowledge, further, to create a more dynamic learning environment. Then, before repackaging old wine in a new bottle, rushing to convert course syllabus and content to HTML, it is crucial first to study applicable designing methods based on how human being learns; then, apply it under the light of technology.

For decades there are plethora of research focusing on people's learning patterns. The purpose of this section is to explore pertinent schools of thought of learning style theories and practices inherent in online learning environment. This provides a theoretical base for evaluating online instructional design that the author will present in Chapter 3.

Derived from learning theories, there are a growing number of "learning styles" explored by researchers (Dunn & Dunn, 1978; Griggs, 1991; Keefe, J. W. 1989).

No matter how people define learning style, the core concept is how people interact and react to learning environment.

There are variety classifications of learning styles based on personalities, psychology, information processing, etc. Curry (as cited in Grigg, 1991) describes variety learning styles in a "onion model," consisting of four layers as following:

1. Personality dimensions value the influences of basic personality on preferred approaches to acquiring and integrating information. Models stressing personality, such as, the Myers-Briggs Type Indicator (Myers, 1978) with dichotomous scales measuring extroversion versus introversion, sensing versus intuition, thinking versus feeling, and judging versus perception.

2. Information processing is the individual's preferred intellectual approach to assimilating information, and includes Schmeck's (1983) construct of cognitive complexity and Kolb's (1984) model of information processing.
3. Social interaction emphasizes on how students interact in the classroom and includes Reichmann's and Grasha's (1974) types of learners: independent, dependent, collaborative, competitive, participant, and avoidant.
4. Multidimensional and instructional preference look at the individual's preferred environment for learning and stress the importance of identifying and addressing individual differences in the learning process. For example, Human Information Processing Model (Keefe, 1989).

James and Gardner (1995) establish a model of learning style as three distinct but interconnected dimensions defined as following:

1. Perceptual Dimension identifies the ways individuals assimilate information through biological response of the body to external stimuli, for instance, input through physiological factors, speech, sound, picture, and any of the five senses.
2. Cognitive Dimension refers to how people store and retrieval of information in the brain. Information-processing habits show the learner's special ways of perceiving, thinking, problem solving, and remembering.
3. Affective Dimension embraces aspects of personality that relate to attention, emotion, and valuing. One component of the affective dimension is the social setting in which learners prefer to learn, for instance, whether learners prefer to work along or with others, or in a group.

As already mentioned that the development of distance learning is divided into four generations, and each generation relies on distinct technology. The more advanced technology applies to distance learning, the wider learning styles preference is covered by technology.

Generation one, correspondence learning, is a print-oriented way of learning that is one of the least effective perceptual modalities (James and Blank, 1991). James and Gardner further (1995) explained that in the cognitive dimension, correspondence study did not have immediate and sufficient feedback. The second generation, video and audio conferencing did not break through the coverage of single learning style preference, but rather provided two additional perceptual modality for learners (visual and sound), and increases timely fashioned feedback comparing to correspondence studies. The application of computer-based distance learning provides opportunities in cognitive dimension. It accommodates different preferred ways of processing information by learners: either analytical or global. However, the affective dimension is still untouched because it was limited by less interactive computer technology at that time.

With the popularity of computer, the Internet and World Wide Web, the forth generation of distance learning, online learning, finally has the chance to embrace three distinct dimensions of learning preference. The future of this generation is unlimited. As possibility such as virtual reality video desktop become common, many problems associated with previous generations should become moot (James and Gardner, 1995).

The technology offers opportunities of a visual, aural, interactive, social, and collaborative learning environment without time and physical constrains, and this reaches a much wider range of learners learning styles.

Multiple Intelligence and Online Learning

Recently, online learning and teaching more or less applies multiple intelligence theory into their instructional design (Shweizer, 1999). One unique point of this approach is that it emphasizes on each individual possesses more than one intelligence, and responds to different content in different ways, however, the learner may have some intelligence strengths. Therefore, to categorize individuals into one learning style and always assume that this person learns new thing in such a way is a doubtful notion.

Dr. Howard Gardner (1996), professor of education at Harvard University, points out that our culture and dominate school systems that reflect our culture teach, test, reinforce and reward primarily two kinds of intelligence: verbal/linguistic and logical/mathematical. His “multiple intelligence” theory proposes that there are at least another eight equally important intelligences that cut through cultural, educational, and ability differences. They include visual/spatial, bodily/kinesthetic, musical, interpersonal, intrapersonal and natural intelligence explained as follows (as cited in Checkley, 1997):

1. Linguistic intelligence is the capacity to use language to express what's on a person's mind and to understand other people. Any kind of writer, orator, speaker, lawyer, or a person for whom language is an important stock in trade highlights linguistic intelligence.
2. Logical/Mathematical intelligence refers to people with a highly developed logical-mathematical intelligence understand the underlying principles of some kind of a causal system, the way a scientist or a logician does; or can manipulate numbers, quantities, and operations, the way a mathematician does.
3. Spatial intelligence refers to the ability to represent the spatial world internally in your mind--the way a sailor or airplane pilot navigates the large spatial world, or the way a

chess player or sculptor represents a more circumscribed spatial world. Spatial intelligence can be used in the arts or in the sciences.

4. Bodily kinesthetic intelligence is the capacity to use the body in parts or in whole – hand, fingers, arms – to solve a problem, make something, or put on some kind of a production. The most evident examples are people in athletics or the performing arts, particularly dance or acting.
5. Musical intelligence is the capacity to think in music, to be able to hear patterns, recognize them, remember them, and perhaps manipulate them.
6. Interpersonal intelligence is understanding other people. Anybody who deals with other people has to be skilled in the interpersonal sphere, such as a teacher, clinician, salesperson, or politician.
7. Intrapersonal intelligence refers to having an understanding of yourself, of knowing who you are, what you can do, what you want to do, how you react to things, which things to avoid, and which things to gravitate toward.
8. Naturalist intelligence designates the human ability to discriminate among living things (plants, animals) as well as sensitivity to other features of the natural world (clouds, rock configurations). For example, hunters, gatherers, and farmers ([online]).

One critical point is that intelligences should be differentiating from learning style. Gardner (1996) explains that learning styles are claims about ways in which individuals purportedly approach everything they do. Yet, multiple intelligence theory addresses that people respond, individually, in different ways to different kinds of content, such as language or music or other people.

With the multiple intelligences theory in mind, technology as tools, a collaborative and interactive online learning environment should offer a variety of options in which learners can access information, interact with information, facilitator, other learners, and experts, and demonstrate outcomes. Schweizer (1999) articulates practices of applying Gardner's multiple intelligence theory into online learning as follows:

1. Reading material (textbooks, compilation of readings, or journal articles) (Verbal/Linguistic)
2. Hyper links with web sites resources to the content. Visual stimulation through colorful images, drawings, diagrams and pictures (Visual/Spatial)
3. Group discussions synchronously or asynchronously online (Interpersonal)
4. Use media tools to record song online that explains an event. (Musical/Rhythmic)
5. Design 'project-based' collaborative assignments that request students to demonstrate their understanding of the major concepts or skills in the course. Learning by doing. (Body/Kinesthetic)
6. Projects can be submitted in a variety of forms: text, a PowerPoint Presentation, audio tape, video tape, a multi-media presentation or through video-conferencing; as well as individually or in cooperative groups. (All intelligences) (p. 41).

Learning Theories and Online Instructional Design

This section is not to indicate one single learning theory is a preferred way for online course design, but rather to present choices of theories in which may apply to online course design.

Recent debate on how to design online courses has been focusing on applying behaviorism versus cognitive constructivism as the fundamental learning theory.

Behaviorism. Behaviorism, as a learning theory, can be traced back to Aristotle, whose essay "Memory" focused on associations being made between events such as lightning and thunder, and later on, many philosophers followed Aristotle's concepts, such as, Hobbs, Hume, Brown, and Ebbinghaus (Black, 1995). Behaviorists tried to explain learning without referring to mental processes. Behaviorism teaches that man is nothing more than a machine that responds to conditioning. Behaviorists view the mind as a "black box" in the sense that response to stimulus can be observed quantitatively, totally ignoring the possibility of thought processes occurring in the mind (Good & Brophy, 1990).

Behavior objectivists believe that knowledge is outside of the learner, truths exist, and learners must memorize them (Cohen, 1987). The objectivism model is best seen in behaviorism psychology, such as in direct instruction, where the goal is usually to have the student acquire and repeat factual information (Black, 1995).

Based on observable changes in behavior. Behaviorism focuses on a new behavioral pattern being repeated until it becomes automatic. DeMar (1988) argues that behaviorism originated with the work of John B. Watson an American psychologist, who claimed that psychology was not concerned with the mind or with human consciousness. Instead, psychology would be concerned only with behavior. In this way, men could be studied objectively, like rats and dogs. Many of the early behaviorists' experiments were done with animals focusing on reflexive behavior of an organism exposed to certain stimuli (Black, 1995). One famous experiment is that if you ring the bell whenever feeding the dog, then, the dog will salivate when it hears the sound of the bell even there is no meal.

Later on, B.F. Skinner made his reputation by testing Watson's theories in the laboratory, and developed the idea of "shaping" – by controlling rewards and punishments, you can shape

the behavior of another person (DeMar, 1988). Cohen (1987) defines behavior objectivism in the following way:

The central tenet of behaviorism is that thoughts, feelings, and intentions, mental processes all, do not determine what we do. Our behavior is the product of our conditioning. We are biological machines and do not consciously act; rather we react to stimuli (p. 71).

Today, most textbooks are designed for, and most teachers are trained in, this type of learning and instructional theory. Students either read or are told factual information, and then they are to repeat this information as a part of assessment to see if they “learned” it. This type of model is fine when the learning objectives are for that type of informational memorization.

The important aspect of behaviorism theory is that the learner is regarded as adapting to the environment and learning is seen largely as a passive process in that there is no explicit treatment of interest in mental processes (Black, 1995). The learner merely responds to the "demands" of the environment. Knowledge is viewed as given and absolute – objective knowledge.

Programmed instruction and self-instructional learning materials were developed under behaviorism psychology. One of the hallmark approaches to behaviorism was the “Mastery Learning Model” originally developed by Morrison (Saettler, 1990) in the 1930s, and his formula for mastery was to pretest, teach, test the result, adapt procedure, teach and test again to the point of actual learning. Mastery learning assumes that all students can master the materials presented in the lesson. Saettler (1990) believes that the “Master Learning Model” is more effective for the lower levels of learning (e.g. to memorize mathematical equation), and not

appropriate for higher level learning that requires thinking and certainties (e.g. to analyze financial plan for a start-up Internet company).

Cognitive Constructivism. Behaviorism obviously cannot accomplish all the intention of education because when the goals are for learners to use higher-order (critical) thinking skills, to process information, and to understand the causes or effects of ideas or actions, and to become fully engaged in their learning, then another learning model is needed. This is the cognitive constructivism that employs some basic ideas from cognitive psychology with total respect to human being's ability to create and construct knowledge, therefore, knowledge is merely a given object, but rather an active, dynamic subject matter digested and constructed by people (Zahorik, 1995).

About 40 years ago, a new movement in science began to coalesce. Cognitive science was developed seeking to integrate insights from several disciplines, including psychology, linguistics, artificial intelligence, and neuroscience, in order to put forth a more comprehensive understanding of the human mind. Cognitivists claim that the mind is not comprised of a single representation or a single language of representations, but rather, all individuals harbor numerous internal representations in their minds/brains (Ertmer & Newby, 1993). Cognitivists (Gardner & Veenema, 1996) explain that individuals do not just react to or perform in the world; they possess minds, and these minds contain mental representations — images, schemes, pictures, frames, languages, ideas, and the like. Some of the mental representations that individuals are born with or form at an early age prove enduring, but many other representations are created, transformed, or dissolved over time as the result of experiences and reflections upon those experiences.

Good & Brophy (1990) summarized:

Cognitive theorists recognize that much learning involves associations established through contiguity and repetition. They also acknowledge the importance of reinforcement, although they stress its role in providing feedback about the correctness of responses over its role as a motivator. However, even while accepting such behaviorist concepts, cognitive theorists view learning as involving the acquisition or reorganization of the cognitive structures through which humans process and store information." (p. 187).

Good and Brophy (1990) also identified key points of cognitive psychology applied to cognitive constructivism are 1). Emphasis on internal mental states; 2). Learner as active processor of information (computer based model); 3). Considers perspective and knowledge of learners

Although cognitive psychology is the underpinning of cognitive constructivist learning theory, constructivism is a completely different approach to learning and teaching – an educational Renaissance. Bartlett (as cited in Good & Brophy, 1990) pioneered what became the constructivist approach. Constructivists believe that learners construct their own reality or at least interpret it based upon their perceptions of experiences, so an individual's knowledge is a function of one's prior experiences, mental structures, and beliefs that are used to interpret objects and events (Jonassen, 1991). As Dr. Zahorik (1995) asserts the constructivist model as following:

Knowledge is constructed by humans. Knowledge is not a set of facts, concepts, or laws waiting to be discovered. It is not something that exists independent of a knower. Humans create or construct knowledge as they attempt to bring meaning to their experience. Everything that we know, we have made. Knowledge is conjectural and

fallible. Since knowledge is a construction of humans and humans are constantly undergoing new experiences, knowledge can never be stable. The understandings that we invent are always tentative and incomplete. Knowledge grows through exposure. Understanding becomes deeper and stronger if one tests it against new encounters (p. 11).

Another statement from Jarvis (1999) supports the human involvement view of knowledge. He argues that what delivered by educators in schools is not knowledge, but information, which only becomes knowledge when it has been absorbed by learners, further, it only becomes legitimate knowledge when it has been found to work for the learners. In another word, knowledge cannot be imposed on learners, instead internal information processing and connecting to experience is the key to transfers information into knowledge. Thus, humans are knowledge architects who build and structure knowledge in their mind.

Piaget's (1963) argument of constructivism was that each individual has packets of information about different things that have meaning to him/her. Meanings come from experiences. All new experiences are seen as they relate to existing knowledge structures. Further, there are two ways to gain knowledge structures: assimilation or accommodation. Assimilation is where new knowledge structures are created by building on, or going through previously made knowledge structures. Accommodation is when old knowledge structures are reshaped to accommodate new experiences (Piaget, 1963).

Cognitive oriented constructivist theories emphasize the exploration and discovery on the part of each learner as explaining the learning process. In this view knowledge is still very much a symbolic, mental representation in the mind of the individual.

Zahorik (1995) lists five elements that need to be taken into account in cognitive constructivist teaching practice:

1. Activating knowledge. Prior knowledge structures need to be taken into account when beginning to learn new material. A teacher needs to know these prior structures because they are the touchstone upon which the new information will be tested. These existing knowledge structures need to be roused or built before the new information is given.
2. Acquiring knowledge. The acquisition of knowledge needs to be done in wholes, not discreet packets. Instead of learning about each physical process and step in throwing a ball, the student would practice throwing first. After the learner had an understanding of the whole, "throwing," then the teacher could teach individual pieces that need attention (angle of the arm, timing the release, etc.)
3. Understanding knowledge. Students need to thoroughly explore and examine all the possible nuances of the new knowledge. They need to share their emerging structures with others that can then critique and thereby help the learner refine the structures.
4. Using knowledge. Students need the opportunity to extend and refine their knowledge structures by using them (preferably in an authentic problem-solving manner).
5. Reflecting on knowledge. If knowledge is to be fully understood and widely applicable both in and out of school, they need to decontextualize it. This requires reflection (p. 12).

Both behaviorism and cognitive constructivism has its strengths and weaknesses.

Schuman (1996) finds that behaviorism puts the learner a situation where the stimulus for the correct response does not occur, therefore the learner cannot respond. However, behaviorism gives the learner a clear focusing goal, then, and the learner can respond automatically to the cues of that goal (e.g. a driver is conditioned to react step on brakes when there is an emergency, a response which one would hope became automatic).

Schuman (1996) also points out that applying cognitive constructivism into instructional design has its strengths on guiding the learner to deal with real life situation, as the learner is able to interpret multiple realities. If learners can solve problem by using their own thinking and analytical abilities, they may better apply their existing knowledge to a novel situation. The weakness is that in a situation where conformity is essential divergent thinking and action may cause problems. Imagine the chaos would appear on the road if every driver decides to react the traffic lights in their own way.

Under each different condition, applying different instructional theory is the real evolution of learning and teaching. In the past, so called “traditional” one-to-many classroom teaching puts too much emphasis on behaviorism where students are presented information, which they repeat back to the teacher modified by consequences (rewards and punishments). Today, with the technological advances, designers are able to move toward a more constructivist approach to design instructional material online. With the rising of online learning and teaching, people see the opportunity to break through the old paradigm, which cognitive constructivism steps in and becomes the favorite theory for online instructional design. Lebow (1993) proposes cognitive constructivism’s values supports the use of opportunities for learners to engage in online distance learning experiences as a means of challenging learners to construct their own

meaning with the help of others, collaborative learning. Teachers are more or less like a guide, facilitators, and directors. In addition, the advantages provided by information and communication technology nurtures the implications of cognitive constructivism for online instructional design, which allows learners to reach out and connect real world experiences, expertise and rescues asynchronously.

However, behaviorists (Mergel, 1998) claim that there are other elements to this theory those still holds true and is valuable in learning and teaching today. Some of them are:

1. Some skills do transfer from one context to another
2. Knowledge does transfer between tasks
3. Abstract training can be effective when taught under the right circumstances
4. Not all instruction need be done in a highly social environment because not all real-world situations are.

As has been suggested, the way that constructivists and behaviorists are depicted by each other tends toward the extremes. The two are not mutually exclusive. However, there are certainly more and less appropriate times to apply the ideas from each school. Once again, in order not to repeat the failure of “one-fits-all” mistake, either behaviorism or cognitive constructivism or latter new theories should not be the only dominate learning or design theories for online instructional design. Ertmer and Newby (1993) believe that the strategies promoted by different learning theories – behaviorism and constructivism overlap (the same strategy for a different reason) and that learning theory strategies are concentrated along different points of a continuum depending of the focus of the learning theory.

Jonnassen (as cited in Mergel, 1998) identifies certain types of learning and matched them with what he believes to be appropriate learning theory approaches which guides the online instructional design:

1. Introductory Learning - learners have very little directly transferable prior knowledge about a skill or content area. They are at the initial stages of schema assembly and integration. At this stage classical instructional design is most suitable because it is predetermined, constrained, sequential and criterion-referenced. The learner can develop some anchors for further exploration.

2. Advanced Knowledge Acquisition - follows introductory knowledge and precedes expert knowledge. At this point constructivist approaches may be introduced.

3. Expertise is the final stage of knowledge acquisition. In this stage the learner is able to make intelligent decisions within the learning environment. A constructivist approach would work well in this case.

Other scholars, such as Ertmer and Newby (1993) also suggest that the instructional approach used for novice learners may not be efficiently stimulating for a learner who is familiar with the content. They do not advocate one single learning theory, but stress that instructional strategy and content addressed depend on the level of the learners. Ertmer and Newby (1993) advocate that a behavioral approach is effective in facilitating mastery of the content of a profession (knowing what); and the cognitive constructivist's strategies are useful in teaching problem-solving tactics where defined facts and rules are applied in unfamiliar situations, especially suited to dealing with ill-defined problems through reflection-in-action.

The Need for Rethinking Online Instructional Design

To understand learning styles, human intelligence, and instructional design theories is just the beginning of the story. Once getting online, the role of an instructor is switching from the 'Sage on the stage' to the 'Guide on the side' model. Or as some researchers claimed an online instructor would be from someone who dispenses information to someone who helps students acquire information. (Rice, Davis, and McBride, 1998).

A more crucial point to recognize is the nature of electronic online learning. Spiro, Feltovich, Jacobson, and Coulson (1991) suggest the electronic-based knowledge environment reflect a metaphor of the criss-crossed landscape with a nonlinear and multidimensional traversal of a complex subject matter. This desire for multiple perspectives and knowledge criss-crossing is well supported in the Internet environment, especially using the hypermedia of the World Wide Web in conjunction with one of Internet discussion facilities (McManus, 1996).

The digital resources provide learners with unprecedented access to information, and one of the most useful tools for the online instructional designer is hyperlinks, hypertext and hypermedia as it allows for a branched design rather than a linear format of instruction. Consequently, learners become information initiators and have the control and choice of information. Nevertheless, unstructured material may result in information overload, and there are some concerns over the novice learner becoming "lost" in a sea of hypermedia. Thus, one question of online instructional design is – How do we structure the large amounts of information in a dynamic, active learning environment in order for students to take the most advantage of it?

In addition, the proper application of information and communication technology is another critical issue while designing online courses. Technology can overcome the barriers of

distance and time, yet it can overwhelm the students as well. Heeren and Lewis (1997) suggest that matching the media with the task, keeping lean media (for example, e-mail) for tasks that do not require much interaction, and reserving rich media for things that require more interaction and broader spectrum of activity.

Last, but not the least, learners will end up on frustration if there is lack of expertise on designing and facilitating online courses from the instructors' side. Hana and Kling (2000) studied on student's distress with a online distance education course delivered via the World Wide Web in Indiana University, U.S. The result of the study indicates that there is a need for more student-centered studies of distance education via information and communication technology. They also recommend more research should be conduct to teach online course designers/instructors how the appropriate use of technology and pedagogy could make distance education beneficial for students.

Summary

The review of literature uncovered the necessity of lifelong learning in a knowledge age as a result of advances in communication and information technology and globalized access to knowledge via the global networks. Because of the ubiquity of computers and global networks, it is possible and feasible to provide flexible and collaborate learning opportunities to meet the increasing learning needs without time and location constrains.

As the learning demand increases, learning needs and/or interests varies, the learner composition mixes, and the number of learners expands, it will be impossible to accommodate individual learning needs and at the same time to enhance learning effectiveness. Utilizing information and communication technology, with proper designed instruction, online learning

environment can be a complement to traditional learning to cope with different learning styles and learning needs.

The government, industries, and educators are making efforts to utilize technologies offering learning opportunities in a knowledge society. Online learning provides a solution to lifelong learners, and it shifts student-teacher relation from the old “Sage on the Stage” model to “Guide on the Side” paradigm.

However, matching instructional design with individual strengths and learning style is an ultimate and contemporary challenge for educators either in classroom settings or in the online learning environment. It truly needs a different mindset to invent an electronic platform providing a dynamic learning environment, which is learner-centered and accommodates different learning styles, needs, and expectations. The criss-crossing multidimensional nature of the Internet, providing various information and communication channels, supports the infrastructure needed in a collaborative and interactive learning environment; yet, at the same time, without proper instructional design, online learners can be overwhelmed by information and technology.

CHAPTER THREE

METHODOLOGY

This study sought to identify issues in designing online courses by comparing ten selected online classes based on a design/evaluation template, developed by the researcher and approved by the committee members.

Nine selected courses were from U.S. Universities, two universities in Wisconsin, one university in Maryland, and one from the affiliated higher educational group in Michigan. One course was from Canada and provided by five post-secondary institutions. The study also sought to portray the types of instructional design methods and technologies applied in these courses. This chapter describes the research methodology used in this study including: (a) research design, (b) population and sample, (c) instrument development, (d) data collection, and (e) data analysis.

Research Questions

This study sought to determine answers to the following questions:

1. What attributes are the fundamental requirements of a good practice of online course design?
2. What are the differences and similarities of the ten selected online courses with respect to the instructional design based upon the developed template?
3. What are the strength and weakness of instructional design among the selected online courses?

Research Design

The research design was developed by the researcher for the purpose of this study. This study was conducted during a seven-month period from January to July 2000. The research

methodology consists of two components. First, an extensive study of literature with respect to a variety of aspects of online distance learning and teaching was conducted. It rationalized the tremendous growth of online learning since late 1990's. The popularity of online asynchronous learning not only offers individual learners liberty and freedom from time and physical locations. But, as a whole learning system, it also compliments the traditional way of teaching to serve the increasing demands of lifelong learning in a knowledge age. The review of literature also placed emphasis on the nature and advantages of those aspects of online learning and teaching, which overcome limitations imposed by one-to-many classroom teaching.

The design and rendering of content always has been associated with instructional methodology and learning styles, regardless of online or off-line approaches. For this study the focus of literature analysis laid efforts on presenting respective positions in behavior objectivism and cognitive constructivism. In addition, the study explored specific learning styles that relate to online instructional design, and which tend to enhance the efficiency and effectiveness of online learning and teaching. The literature review was set to accentuate two major issues. First, the mega trend of online learning as a widely perceived solution to increasing lifelong learning needs resulting from a globalized economy and advancements of technology. Second, the argument of applying innovative learning theories, collaboration approaches, flexibility in learning concepts, and outreaching resources, in online course design in order to serve individual learners' needs.

The second component of the research design is an online course design template. This template was developed by the researcher in discussion with faculty members in the Department of Hospitality and Tourism at the University of Wisconsin-Stout in the US, as well as members in the Department of Business Computing at the University of Paderborn, Germany. Finally, the template was approved by three thesis committee members of this research project. Both content

and format of the course analysis instrument were revised to ensure the applicability and accountability of the template.

Sample

Accessibility, time, finance, and intellectual rights constrain the sample selection for this research study. To determine the sample pool a decision was made to select online courses from universities in the United States of America, namely, two in Wisconsin, USA, one university in Maryland, one educational group in Michigan, and one course from a university in Canada. Again, the researcher was restricted with respect to course selection because the course timeline varied as well as registration fees exceeded the researcher's budget.

Once the sample pool was selected, it was decided to contact the instructors to verify their willingness to participate in this study. Then, the researcher conducted a process of eliminating prospective courses that were only to be regarded as "web-enabled" courses (only a fraction of the instructional materials are taught online) rather than as being exclusively delivered online.

As result of this selection process ten courses were finally chosen from the target sample pool because the Internet/Web is the dominant deliver mechanism alone with their dynamic instructional content. In addition, it was the researcher's intention to select courses from divers fields in order to cover possibly a wider and richer range of online course design methodologies.

Instrument Development

The research instrument was developed on basis of a far-reaching examination of studies covered in the literature review. The template contains questions pertaining to sixteen attributes that are divided into three sections: i) facilitation of online learning, ii) content presentation, and iii) application of information and communication technology.

Section one has nine attributes related to the practice of facilitating online learning. Four attributes are dealt with in the section of content presentation. The last section includes three attributes associated with the application of information and communication technology.

Each attribute is being covered by a set of questions that stated the key issues to be evaluated for each course. Questions were categorized into two variants, "yes or no questions", and "qualitative questions".

A score of 0 or 1 respectively was given to evaluations of "yes or no questions" to distinguish the evaluated aspects. The evaluations of qualitative questions were marked out on an integer scale from 0 to 4 Max, in some cases indicating decreasing degrees of congruence with the respective questions, in other cases representing alternative characterizations. In addition, a comment section was constructed in the template for presenting further explanations, remarks, and annotations.

The result of this modeling approach is twofold. On one hand, this type of ranking of evaluations for each of the questions within one given attribute offers the evaluator a rather compact and formal vision of the qualification pattern for the attribute, as compared to mere verbal characterizations. On the other hand, this approach allows generating an overall picture helping to compare the covered instructional design issues of all selected courses on a more formalized basis. Again, the quality of the derived comprehensive conclusions of this model approach has to be measured against the possible outcomes of a mere verbal reasoning. Accordingly, the template was used twice. Firstly, it was applied to an individual course for outlining the discriminating factors formally defining possible differences and similarities of the online courses. Secondly, it was used to summarize the overall strengths, and weaknesses of the ten selected online courses for a cross-course examination.

A draft of this instrument was developed in April, 2000 and reviewed by a group of faculty members from the University of Wisconsin-Stout, and the University of Central Florida in the US, and the University of Paderborn in Germany. The template was also reviewed a group of students at the University of Paderborn, Germany. The purpose of the expert review as well as students' assessment was to ensure that the content of the instrument was valid and that the format would be understood by following researchers. The researcher e-mailed each reviewer a copy of the template and discussed the overall format as well as attributes and questions with each reviewer via Internet and face-to-face discussions. Suggestions from the reviewers were used to make revisions and improvements to the content and the format of the originally designed instrument.

Data Collection Procedures

Once the ten courses were selected, cover letters, template, and consent form were e-mailed out to inquire the access rights of seven courses from the course designer/administrator on April 11th, 2000. All designers/administrators of the seven courses consented access rights to the researcher. The other three courses are exclusively accessible via the World Wide Web without restriction of any access rights. Thus, they are to be regarded as a public information resource, and the researcher acts as regular World Wide Web viewer to study these public resources.

Data Analysis Procedures

The researcher began her analysis on the content design of the selected online courses on June 1st, 2000. Each course was evaluated separately according to the sixteen attributes in the three sections of the template. Accordingly, a complete score table of the ten courses was derived based on the model embedded in the template. In addition, the researcher also verbally discussed

and emphasized differences and similarities of the ten courses as a whole to reveal further peculiarities or highlights as well as repeating patterns of current online content design.

Summary

This chapter explicates the research methodology applied in the empirical study conducted in this thesis including the research design, population and sample, instrument design and development, data collection, and data analysis. The following chapter, chapter IV will discuss the findings of the study.

CHAPTER FOUR

ANALYSIS OF DATA

The particular purpose of this empirical study was to identify issues in designing online courses by comparing ten selected Internet based classes based on an assessment template designed by the researcher and proved by the members of research committee. The second purpose was to portray the types of instructional design methods and technologies applied among these courses. The results of this study are possibly elucidating a set of criteria for enhancing the quality of online instructional design, and the quality of facilitating online distance learning.

The research was encompassed by four objectives:

1. To determine the importance of online education in the upcoming knowledge age.
2. To create an assessment template for designing/evaluating online courses.
3. To study and compare the instructional design of the selected ten online courses guided by three criteria classes in the assessment template.
4. To identify highlights of instructional design among selected ten online courses.

The goal of this chapter is to report findings of this empirical study and address the research objectives. The findings were based upon the analysis of the data collected from ten online courses through the means of an online course design template. The template contained questions pertaining to sixteen attributes that were divided into three sections: i) facilitation of online learning, ii) content presentation, and iii) application of information and communication technology.

The respective classification or scoring is confined to the researcher's personal and, as such, subjective evaluation pattern. It is the researcher's opinion though that most of these classifications carry over rather "objective" attributes due to their very nature. The respective

findings thus will be agreed upon a wide variety of evaluators. But, without doubt, there will be some judgments which are prone to be challenged by other evaluators, due to the complex underlying teaching concepts, content domain, structuring, presentation mode, et al. To reduce subjectivity as much as possible the researcher and the research committee members try to explicate the judgment criteria in any case to the best mastery.

Among the ten exclusively online delivered courses, five were graduate level courses, four courses for adult learners who are supposed to have previous experience in the field of the respective studies, and one undergraduate course.

Highlights and examples are used to explicitly demonstrate the findings of this empirical study.

Findings

Facilitation of Online Learning

Attribute 1. Instructional Objectives and learning Outcomes

Question 1a. Are learning objectives stated?

Nine out of ten courses had stated their learning objectives. Course No. 7 did not state any learning objectives in the instructional material.


Question 1b. Are they clear and comprehensive?

All nine of them had scored 2 as fair clear and comprehensive objectives were listed within the course materials. Only for course No.7 it was not possible to identify clear and comprehensive objectives in the course content.

Figure 1.01 demonstrates an example of fairly clear and comprehensive objectives stated in course No. 2.

Figure 1.01 Example of Clearly States Objectives

Schedule



Learning Objectives

Section: Section 3 - The Information System Applications in Hospitality and Tourism
Activity: Overview

STUDENT LEARNING OBJECTIVES

Upon Completion You should be able to:

- Identify and describe various information system applications used in hospitality and service businesses
- Explain the role of different information system applications in supporting hospitality operations (i.e. property reservations, front office, accounting, point-of-sale systems, etc.).
- Select proper information systems to support operations.
- Evaluate information systems to determine how they can enhance your management capabilities

Attribute 2. Adaptability

Question 2a. Does the course accommodate different learning styles?

Information collected in the assessment questionnaires of the ten courses (see Appendix D, p.127) shows that seven out of ten courses had combined different and complementary content renderings, and nine out of ten courses had provided various learning activities to accommodate different learning styles. Summarized results in Appendix C (see p. 125) also shows that only course No.3 was not designed to meet various needs of different learning styles because of its simple text-based content rendering and its single learning activity, [i.e.] readings.

Table 1

Analysis of Content Renderings Used in Selected Courses by Using Frequency Counts

Content	Text	Audio-visual	Video Clips	Audio Clips
Renderings		presentations		
Frequencies	10	4	3	1

Table 1 summarizes that text, audio-visual presentations, video clips, and audio clips were used as content renderings to serve the needs of different learning styles in the perceptual dimensions. Text format was the most common method to deliver course materials among ten selected online courses, followed by audio-visual presentations, video clips. Audio clips were only utilized in course No.10.

Table 2

Frequency Count of Learning Activities Utilized Among Ten Selected Courses

Learning Activities	Frequencies
Readings	10
Asynchronous discussions	9
Collaborative projects	5
Online research	5
Case Studies	4
Problem-based assignments	3
Synchronous discussions	2
Practice	1
Visual field trip	1

Table 2 summarizes that the combination of readings, asynchronous discussions, online research, and collaborative projects were the most common methods used among the ten courses to facilitate different learning styles in the cognitive, and social/affective dimension. Case studies, problem-based assignments, synchronous discussions, practice and visual field trips were less utilized.

Question 2b. Does the course accommodate different teaching styles?

All ten courses were able to accommodate different learning styles. Six courses were designed to accommodate the instructor's teaching style as a facilitator, and/or a formal authority, and/or an expert. Course No. 2 defined the instructor's styles as a delegator, and/or a facilitator, and/or an expert. An instructor could be an expert or a formal authority in course No.3 and course No. 8. Course No. 5 accommodated three teaching styles, being a facilitator, and/or using the personal model, and/or being an expert.

Question 2c. Is the course designed to accommodate different competency levels based upon a learner's previous experience?

None of the ten courses was designed to accommodate different competency levels based upon a learner's previous experiences. In another word, all of the learners were assumed to have the same level of knowledge in the field of studies, and everyone was given the same designed materials to study.

Attribute 3. Audience Consideration

Question 3a. Does the course give timing flexibility to the student regarding learning course materials and accomplishing learning activities?

Ten filled out questionnaires in Appendix D (see p. 127) indicates all ten courses were in unison on offering timing flexibility to students in learning course materials and in participating in learning activities. Eight courses, No.1, No.2, No.4, No.5, No.6, No.7, No.8, No.9 listed due dates for assignments, and/or time periods for joining online discussions. The due dates and time frames did not prevent students from moving freely among course materials, but rather provided a method to push learners to keep up with the pace of the course.

Attribute 4. Online Learning Activities

Question 4a. What level of online learning activities does the course material promote?

From novice to mid level to advanced online learning activities represent different levels of students' involvement in learning, specifically, from passive to active. Eight courses scored 0 under this attribute because they supplied a combination of levels of online learning activities. These activities were mixed in different ways as shown under the comment sections of the courses' assessment questionnaires in Appendix D, p.127. The common approach was to combine novice and mid level activities, represented by course No.1, No.5, No.7, No.8 and No.10. Course No.6 mixed novice and advanced level online activities in the instructional materials; course No.2 and No. 9 had spanned their online learning activities across all three levels. However, course No.3 and No. 4 were scored low 3 because they only contained one level, "novice", online learning activities.

Figure 2.01 Illustration of Online Activities

The screenshot displays the LearningSpace interface. On the left, there is a sidebar with a 'Schedule' section containing icons for a calendar, a clock, and a pencil. The main content area shows a course outline with the following modules and activities:

- Module 6 - Vision and Decisions**
- Module 7 - Strategic Actions**
 - Outcomes and Summary
 - Gillette Company Case #18 Paper (due: 03/01/2000)
 - Gillette Company Web Site
 - Discussion of Gillette Case (from 03/02/2000 to 03/05/2000)
- Module 8 - Financial and Global Considerations**
 - Outcomes and Summary
 - Sign-On to Capstone Simulation Web Site (due: 03/09/2000)
 - ScreenCam Presentation: Financial Ratios
 - Bass Pro Shops Web Site
 - Case 8 Paper: Bass Pro Shops (due: 03/15/2000)
 - Discussion of Case 8: Bass Pro Shops (from 03/16/2000 to 03/19/2000)
- Module 9 - Capstone Simulation**
 - Outcomes
 - Team Roles (due: 03/21/2000)
 - ScreenCam Presentation: CapIntro
 - ScreenCam Presentation: CapScar
 - First Round of Capstone Decisions (on 04/05/2000 at 05:00:00 PM)
 - Second Round of Capstone Decisions (on 04/11/2000 at 08:00:00 PM)
 - Setting Scoring Weights (due: 04/14/2000)
 - Third Round of Capstone Simulation Decisions (on 04/18/2000 at 08:00:00 PM)
 - Fourth Round of Capstone Simulation Decisions (on 04/24/2000 at 08:00:00 PM)
 - Discussion of Capstone Simulation (from 04/27/2000 to 04/30/2000)
 - Team Member Evaluations (due: 04/30/2000)

Figure 2.01 displays an example of combining various levels of online activities into

instructional materials. From the outline of modules in course No.9, learners experienced different levels of Internet activities, some required passive involvement while others demanded active engagement. In this course, the instructor mixed the “novice” with mid level of learning activities, such as directing students to the “Gillette Company Web Site” for gathering information, then organizing an asynchronous “Discussion of the Gillette Case”, shown in Module 7. The course also provided participants an opportunity to join a collaborate project, presented in Module 9, the “Capstone (business decision making) Simulation” on the web. In this simulation, students “competed in an electronic team setting making cooperative decisions under a simulated business environment”.

Learners in course No.9 not only passively read provided course materials but also actively engaged themselves in discussions as well as working collaboratively in a team to make decisions.

Attribute 5. Positive Interdependence

Question 5a. Does the course encourage group work?

As indicated in tables in Appendix D (see p.127), half of the selected courses were designed to encourage group works. Course No.1 required group discussions through the entire course along with a group project. Assigning works to teams was the tactic used by course No.4 to promote group works. Course No.2, No.6 and No.9 involved comprehensive collaborative projects at the latter course period that had required students to accomplish the work by utilizing skills they had built up throughout previous learning experiences.

There is no sufficient data to evaluate course No.10 on the group work issue. However, it was pointed out in the course that one of the best ways to make use of this course was “by a

group of teachers, working with the aid of a trained facilitator, for a combination of independent and group learning”.

Question 5b. Does the course assign roles to participants within group work?

Only course No.1, No.2 and No.9 had signed roles to group members while designing group works.

Question 5c. Does the course require peer evaluations to ensure the balanced and quality inputs among group members?

Among the five courses, which encouraged group work, courses No.2 and No.4 did not apply any methods to balance the workload among group members. The other three courses, No.1, No.6, and No.9 included peer evaluations within the group projects to ensure equal inputs among team members.

Attribute 6. Individual Accountability

Question 6a. Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?

Seven courses had met this criterion by designing several learning activities in the courses. Comment sections of this question shown in Appendix D (see p. 126) reveals that article critiques, discussions, research projects, problem-based practices, case analyses, group assignments, and collaborative project were often employed by instructors to engage learners in analysis and synthesis. Self-assessment/self-test was the method to involve learners in evaluating learning outcomes by themselves. Peer evaluations was the most common way to take students on evaluating group members within collaborative/group projects

Course No.2 is the highlight under this question. In this course, the Personal Development Portfolio (PDP) was designed as a self-evaluation tool to “become your (learner’s)

record of the course and an effective way to communicate your (learner's) progress to the instructor". Students in course No. 2 were assigned a PDP in every module to summarize, reflect, demonstrate, and evaluate what they had learned through the course materials, as well as to suggest improvements on the course to the instructor. Sample instructions of the PDP from course No.2 are illustrated as following:

Expectations: In this section you should summarize your personal expectations regarding this segment of the course How did your personal needs match the course objectives and learning outcomes? Did the section allow you to integrate prior experiences into the current learning?

I. Suggested Improvement: List at least three things that you would change or add to the section to improve learning and help you to meet learning objectives."

II. Reflection: Self evaluate your learning performance. Did you adequately meet your personal goals? Did the structure of the course allow you to exercise your learning styles? What "grade" would you assign yourself for this section?

III. Skill Demonstration: Demonstrate a minimum of one skill you acquired during this section. You may choose to explain a new concept, define or explain a technical term, prepare a visual that would assist someone in understanding a concept from the section or any new skill of your choice.

Question 6b. Do the instructional materials require individual participant to help and learn from each other?

Online communication within the course is essential to promote learning among class participants. Only two courses, No.3 and No.10, did not require participants to help and learn from each other, and all other 8 courses had mandated students to join online course discussions.

In addition, the required discussions were ranged from 10% to 20% of students' final grades except no specific percentage indications in course No.2, No.5, and No.7.

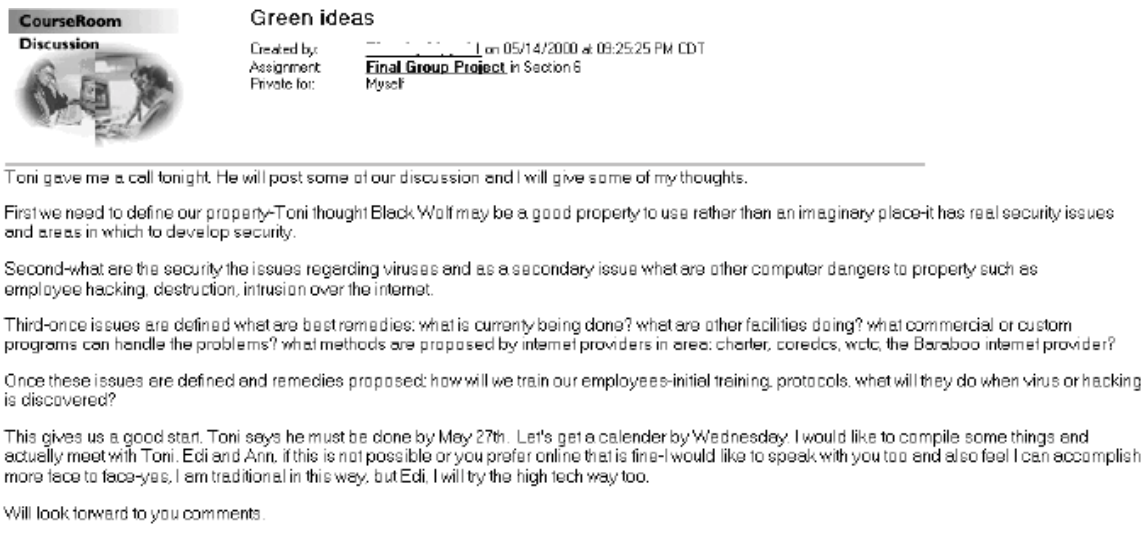
Attribute 7. Interactive Instructional Materials

Question 7a. Do the instructional materials promote interaction among students and instructors?

All of the courses were designed to promote interactions by using a sharing discussion database that allowed interactions among students and instructors. The instructional materials of ten selected courses had either “encouraged” (e.g. course No.3 and No.10) or “required” students to interact with other participants and instructors.

A typical example of how interaction happens online among students and/or instructors is shown in Figure 3.01 and Figure 3.02. Figure 3.01 presents a screen shot of discussion in course No.2. Basically, the student was asking the professor to comment on their ideas of conducting a final project.

Figure 3.01 Illustration of Online Interaction between Students and Instructors



The screenshot shows a discussion interface. At the top left, there is a 'CourseRoom Discussion' header with a small image of people in a meeting. To the right, the title 'Green ideas' is displayed. Below the title, it says 'Created by: Assignment' and 'Private to: Final Group Project in Section 6 Myself'. The main content of the discussion is a list of questions and a response:

Toni gave me a call tonight. He will post some of our discussion and I will give some of my thoughts.

First-we need to define our property-Toni thought Black Wolf may be a good property to use rather than an imaginary place-it has real security issues and areas in which to develop security.

Second-what are the security the issues regarding viruses and as a secondary issue what are other computer dangers to property such as employee hacking, destruction, intrusion over the internet.

Third-once issues are defined what are best remedies; what is currently being done? what are other facilities doing? what commercial or custom programs can handle the problems? what methods are proposed by internet providers in area: charter, corecdcs, wctc, the Baraboo internet provider?

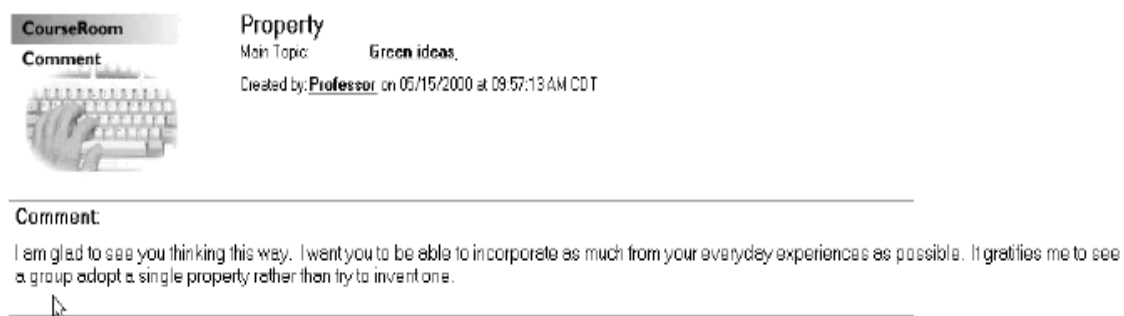
Once these issues are defined and remedies proposed: how will we train our employees-initial training, protocols, what will they do when virus or hacking is discovered?

This gives us a good start. Toni says he must be done by May 27th. Let's get a calender by Wednesday. I would like to compile some things and actually meet with Toni, Edi and Ann, if this is not possible or you prefer online that is fine-I would like to speak with you too and also feel I can accomplish more face to face-yes, I am traditional in this way, but Edi, I will try the high tech way too.

Will look forward to you comments.

Figure 3.02 shows the “professor’s” response to the team’s idea. The professor was delighted to see this group applying knowledge to a real world situation.

Figure 3.02 Illustration of Online Interaction between Students and Instructors



It is pointed out in the comment sections that course No.2 and No.7 promoted interactions among students and instructors via both, asynchronous technologies, such as whiteboard, e-mailing, and via synchronous technologies, such as SameTime (an online synchronous conferencing tool from Lotus Development), NetMeeting, Internet Relay Chat.

Question 7b. Can the student interact with the course material?

Interaction with the course material refers to learners actively engaging themselves in learning online by inputting information to retrieve feedback from the programmed course materials instead of passively receiving information from a computer monitor.

Except course No.4, No.6, and No.7, the other seven online courses had implemented interactive course materials. Four out of these seven courses had designed an interactive self-assessment database within the courses, which allowed students to interactively verify their competency levels in various stages of learning. Course No.8 and No.9 employed different methods to make instructional materials interactive.

In Course No.8, in order to achieve one of the learning objectives, “To comprehend and practice some manual communication (sign language)”, the course integrated one interactive sign language software for students to follow and practice different signs. The “Sign Language Teacher” software shown in Figure 4.01, will demonstrate signs of the word inputted by users, and the user can choose to learn different signs of “ABC’s” or “123’s”, and to pause/continue,

or stop, or exit the program, and to make the sequences fast or slow. This mechanism offered students more practical and hands-on experience of learning.

Figure 4.01 Illustration of Interactive Learning Materials



Another design highlight of unique interaction between students and the learning materials was in Course No.9. Because the learning outcomes of the final collaborative project were to “worked in an electronic team setting making cooperative decisions; developed strategic actions in a competitive setting...discovered how the various functions of a business interact with one another; improved your (learner’s) awareness of competitive effects on business operations...” This course used a web-based interactive program, Capstone Business Simulation, to facilitate the above mentioned learning outcomes.

Capstone participants divide into competing teams of four to seven players. Each team acts as an executive committee responsible for running a \$100M electronic sensor company. The game consists of two components: The Web site — where players download starting market conditions, communicate with team and class members, and upload corporate decisions. The Decision Support Software — which runs in Microsoft® Excel. Using the software, players determine product positioning, price, sales and promotion budgets, production levels and financing requirements...” (www.capsim.com, 2000)

Sample comments from students in course No.9 show the effectiveness of applying interactive materials in a course to achieve learning outcomes.

Student 1: The simulation consists of the entire company operation. This is my first time to involve every part of the company, which I think is very useful for my future career.

Student 2: ...I definitely learned a lot from this simulation. It helped me to see how important communication is in the business world...

Student 3: Given some early success, then failures, observing successes of others and the problem solving required to put out fires, the team learned more than the paper results could show...

Student 4: ... a few more guiding instructions could be provided prior to beginning and throughout the course of the rounds. Team should be more diverse and assignments should be based one's work experience or background...

Attribute 8 Supporting Resources

Question 8a. Can the instructor “link” to appropriate materials, examples or simulations?

All ten selected courses had met this standard to enhance the efficiency of online learning and teaching by linking to appropriate materials, examples or simulations.

Question 8b. Can students access appropriate library resources? (This may include a “virtual library” accessible through the World Wide Web)

An opportunity to extend the knowledge base in ‘anyplace’ at ‘anytime’ beyond given course materials is to provide virtual library resources to online students. Summary of evaluation result in Appendix C (see p. 126) displays that only course No.3 and No.8 did not integrate any

library/virtual library resources in the instructional design. All other courses had seized the chance to offer learners a rich virtual environment of resources.

The highlight with respect to question 8b was in course No. 7, a painting course that was pertinent to adult learners. This course contained links of art museums from the U.S. to Vatican, presented in Figure 5.01. By using the customary hyperlinks technology on the World Wide Web, Course No.7 connected students to the precious paintings in a handful of museums on the world just a click away.

Figure 5.01 Illustration of Visual Museums



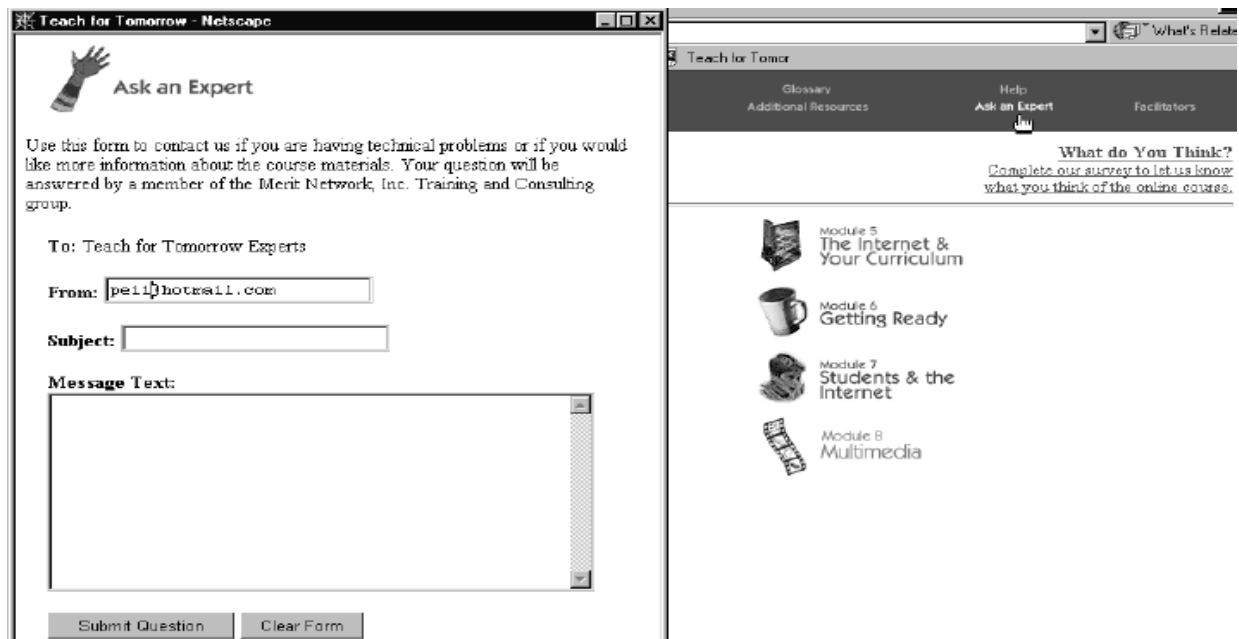
Question 8c. Can the course support interaction with “experts” or guest lectures?

Out of ten-selected online course, there was one and only one course, course No.10, which had integrated the “interaction with experts” component into the course design.

Course No.10, the design highlight of question 8c, features a design a button called “Ask an expert” on the course template. Once the user clicks on this button, a mail form will pop up as shown on the left-hand side of Figure 6.01. The user can easily type in questions that will be answered by “a member of Merit Network, Inc. training and consulting group.”

Figure 6.01

Illustration of Supporting Interaction with Experts or Guest Lectures in Course Design



The researcher commended on the course design and asked questions by using this mechanism. Two days later, a message as follows showed up in researcher's mailbox from one "teaching facilitator of Merit Network, Inc. training and consulting group."

Hello Pei,

We are always glad to hear positive comments ... Our programmers use primarily HTML and Java script ...(the course) uses a professional development model that combines individualized online- instruction with small-group facilitated workshops at the local school level...If you are interested in attending one of the facilitator workshops, consider signing up for our Center to Support Technology in Education Announcement list. From the (course) login page, select About, then Registration.

Thanks again for visiting (the course).

Attribute 9 Appropriate Feedback

Question 9a. Does the design encourage timely feedback from the instructor?

Of the ten evaluated courses, three had addressed the issue of “timely feedback from the instructor”.

“...one business day...” and “...within a 24 hours period” was the way how instructors in course No.1 and No.2 defined timely feedback from the instructor. The instructor of course No.5 only mentioned that “...the instructor will respond to student inquiries in a timely manner...” without specific interpretation of “timely manner”.

Question 9b. What type of feedback can the instructor provide?

The design template listed four types of feedback from the instructor to learners’ inquire. Seven out of ten instructors had mixed narrative and comments to respond to students’ questions, and there were no sufficient data to evaluate course No.3, No.6 and No.10 on this issue.

To be noted the instructor in course No.2 responded to students’ questions by list himself/herself anonymously as the “professor” instead of listing his/her real name.

II. Content Presentation

Attribute 1. Appropriate Organization

Question 1a. Is the course information structured appropriately?

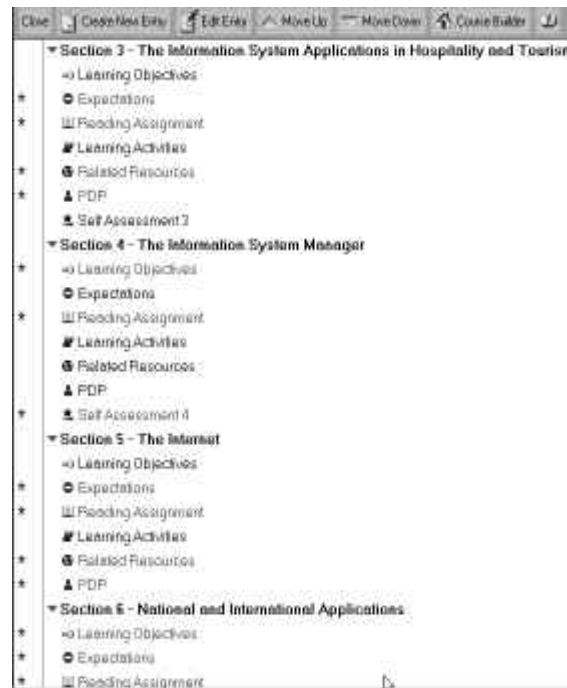
Except course No.6 and No.8, the rest of eight courses had well-structured information within the course design.

Figure 7.01 and Figure 7.02 display examples of an ill-structured course versus a properly structured course information.

Figure 7.01 Illustration of Unstructured Course Information



Figure 7.02 Illustration of Structured Course Information



The design of module outlines in course No. 8 see Figure 7.01, shows that the course had an unbalanced information load. Sometimes one module only had one entry/learning activity,

and the rest of the modules had more than three entries/learning activities. In addition, Figure 8 also shows there were fewer learning activities towards the end of the course versus much more entries at the beginning.

On the other hand, Figure 7.02 reveals an even-balanced and structured information outline in course No. 2. Every module had the same number of structured learning units, very clear and precise.

Question 1b. Is course information provided at appropriate places?

Ten courses had all met this criterion.

Attribute 2. Visual Aspects

Question 2a. Are there Help file mechanisms to online assist the user in the course?

Course No.3 and No.7 did not design Help files in the courses, and the rest of eight courses all had Help files to online assist the user in the courses.

Question 2b. Is the design of the user interface attractive?

The researcher found that this was a specifically difficult question to answer due to its inherent highly subjective nature. However, by working through the selected ten courses, course No.10 was rated the highest score, 0, as the most attractive course over the rest. Course No. 2, No. 5, No. 7, No. 8 and No. 9 were scored 2 due to their average appearance without specific impression with respect to visual attraction. Course No. 1, No. 3, No. 4, and No. 6 had been ranked low 4 in this category because they were solely text-based courses without utilizing any of the abundant electronic media features to attract online learner's attention.

Figure 8.01 exhibits the text-only, unattractive design for an online course. On the contrary, from course No. 10, Figure 8.02 displays a screen shot of a visually enhanced design by using streaming video, hyperlinks, and graphics.

Figure 8.01 Illustration of Text-Based Course Design

Schedule

Notes for Unit 3

Unit: Unit 3 - Managing the Environment
 Activity: Overview
 Due: 02/01/2000 to 02/07/2000

Notes on Chapter 4:

Make sure and read the textbook chapter for this module and take a look at the powerpoint presentation for this chapter on the cd-rom.

The environment surrounding an organization is very big. It is also not always easy to distinguish between what is inside an organization and what is external. Should stakeholders be considered part of the org or part of its environment. More difficult may be the Board of Directors. Or how about a manufacturer that works closely with a supplier to insure quality inputs or a buyer that helps an org develop a customized product. The border or skin of an organization has sometimes been referred to as 'cloud-like' and 'highly permeable' so you are never quite sure at what moment you moved from the org to the env or vice-versa. What's in and what's out is often dependent on the issue or discussion being tossed about.

I view the environment of an organization as having 3 parts. The first is what I call the external direct stakeholder environment. This includes external stakeholders that deal or "bargain" directly with an organization either as a supplier of some input that the org requires or as a buyer of the org's output. These include suppliers of materials, equipment, energy/utilities, oil, coal, labor, capital (stockholders and lenders), information and so on. You would also include various governments that supply the right to operate in a given geographic area. Finally various customers would be included. The second part of the environment may be called rival firms or indirect external stakeholders. This part of the env. includes firms in the org's industry as well as makers of substitute products or services from outside a firm's industry. These are indirect stakeholders in that they do not bargain directly with the org but their influence comes from their ability to affect an org's relationship with its direct stakeholders. The third part of the environment is the general environment which is basically everything else. This general environment is usually discussed in terms of various sectors (economic, social, technological, legal/political, demographic).

Obviously, if "matching" an organization's structure and direction to its environment is important then there is a lot to track. Unfortunately it gets worse. Parts of the environment do change more than others, some predictably and others quite unpredictably. Worse yet these different parts of the environment are not each autonomous but rather are often "implicitly intertwined". (I read that term somewhere and try to use it every once in awhile. I tried to put it into my dissertation but my committee head crossed it out. I've always felt bad about that.) Tracking some of these interrelationships was part of the focus of the article that goes along with this chapter. So not only do you have to forecast expected changes in each part of the environment but you have to then look at the impact of those changes on other parts of the environment as well.

Under the chapter discussion of the industry sector the authors introduce three of Porter's five forces: rival firms in the industry; makers of substitutes and potential new entrants. The other two are buyers of a firm's output and suppliers of needed inputs. It was Porter's belief that a firm should develop strategies to protect itself from these five forces. This is where Porter introduces his three possible competitive strategies for firms. According

Figure 8.02 Illustration of Attractive Design of User Interface

TEACH FOR TOMORROW

Home Menu Log off Status Report About TTT Portfolio Glossary Help
 Discussion Additional Resources Ask an Expert Facilitator

Video
 Captured Wisdom Seminar: Technology Corner. Copyright the North Central Regional Educational Laboratory, 1900 Spring Road, Oak Brook, IL 60522, used with permission. For information about ordering the videos, see Additional Resources.

Modules

- Getting Started
- Finding Educational Materials
- Internet Activities
- New Ways of Learning
- The Internet & Your Curriculum
- Getting Ready
- Students & the Internet
- Multimedia

Navigating the Internet using Netscape Communicator

As you saw from the video above, Netscape Communicator is an example of browser software. This software allows you to view text and graphics on the Internet.

About Netscape Communicator

Netscape Communicator is a package of tools. It contains the [Internet](#) browser software called Netscape Navigator. See example on left.

Netscape Communicator also has a feature called [Netscape Composer](#). See example on left.

Teach for Tomorrow will not be covering the other parts of [Groups](#), and [Conference](#). You can learn more about these features [Help](#).

Moving backward and forward between visited pages

Back Forward Reload Home Search Guide Print Se

Web browsers allow you to return to web pages you've visited the pages' web addresses or [URLs](#).

Teach for Tomorrow - Netscape

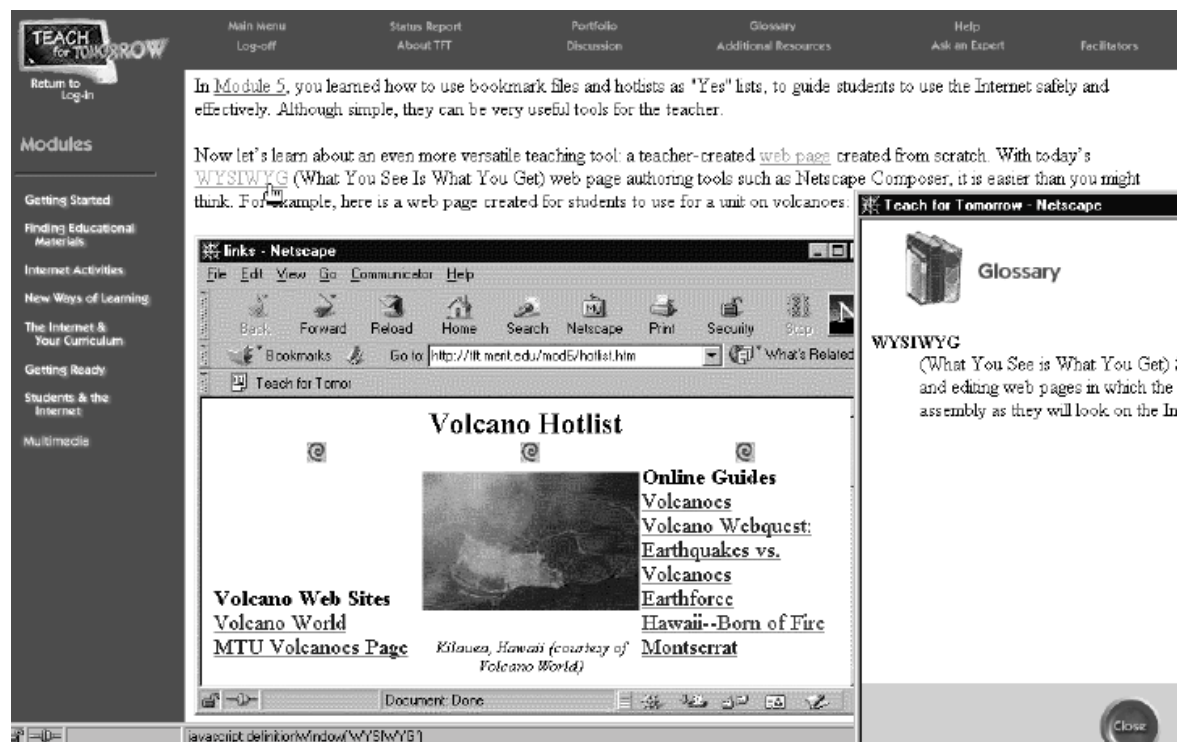
Glossary

Internet
 The global network of connections that links computers worldwide into one enormous communication grid.

The highlight of user interface attractiveness reveals in course No. 10. The power of visual appealing in course No.10 came from its graphically enhanced screen, as well as interactive links within the course materials. For instant, in Figure 8.03, the student may click on the interactive “WYSIWYG”, which brings up the explanation, if he or she does not understand this special term.

In addition, application of quality video and audio clips in course No.10 offered the viewer a more vivid visual and aural attraction of the course. Last but not least the easy navigation throughout the course has to be pointed out.

Figure 8.03 Illustration of Attractive Design of User Interface



Attribute 3. Ease of Access

Question 3a. Is the course accessible 'anytime' and 'anyplace' in general?

All ten courses were accessible anytime anyplace. This scoring is based on the researcher's sample to experimentally log in ten times during various time periods of the day from Europe, outside the original delivery region of the ten selected courses, North America.

Question 3b. Does the page load quickly?

The design template listed 4 categories to measure the page loading time. Course No.3, No.7, and No.10 took one to six seconds to load the web pages. The remaining seven courses were delivered on the Lotus Notes LearningSpace platform, which can be accessed both, via

browser on the World Wide Web and/or via Notes client connected to a Domino Server over the Internet. Testing both accessible ways showed that it was much faster to log into the courses via Notes client access to the Notes Domino Server, in one to six seconds, as compared to via browser, over 31 seconds.

Question 3c. Are segments designed to enhance speed of access (short pages)?

“Short pages” are here pragmatically referred to as to finish viewing one chunk of information by issuing less than three times scrolling commands, i.e. via the ‘PageDown’ key. Course No.2 was the only course that had designed short pages in this sense throughout the entire course materials. The remaining courses were all designed to have “long page” information accessible only by continuously scrolling of the screen.

Question 3d. Does a student need specific equipment to use the course?

Participants in Course No.7 and No.9 had to pay an extra amount of money to participate in the course activities. Due to the nature of course No.7, a digital painting class, it required participants to purchase the digitizing pad and a package of painting software, which would cost totally over \$ 200 on the top of course fee.

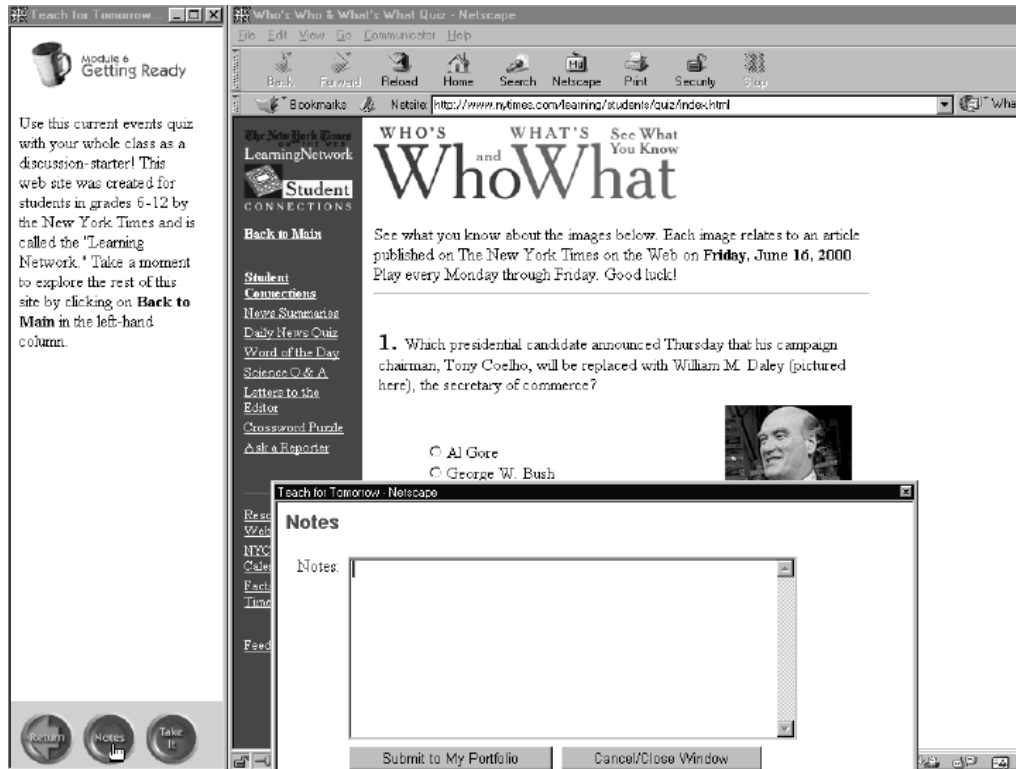
In order to join a web-based simulation game, Course No.9 required students to “buy a Registration Number on the web site” and “the cost will be \$39 which you (students) can pay in several ways”.

On the contrary to pay for additional fees for attending an online course, course No. 10 is not only open to anybody as long as the person has a computer and an Internet connection, but also it encourages the learner to throw out paper and pencil away and to be a complete e-learner.

As exhibited in Figure 9.01, by clicking either the “Notes” or “Take it” button, the user can write annotation, comments, and copy the website, then “submit it to my portfolio”. By the

end of the course, users will build an exclusive digital portfolio by themselves, which archives all the notes and websites they need.

Figure 9.01 Illustration of Special Design for Online Notes Taking



Attribute 4 Uses of Icons and colors

Question 4a. Is there any explanation of different meanings of icons/colors used in the course?

Ten filled out questionnaires in Appendix D, p. 127 presents detailed information about the icon usage among selected courses. Except course No.3 and No.6 that did not design icons in the courses, none of the remaining courses had explained the meaning of the icons represented although they all utilized icons in the course design.

All the courses had used colored letters/objects, but, again, none of them explained the meaning of colors except course No.10. This course had included a short annotation in the Help files, for example, "All lessons ...contain words underlined in yellow or green. When you click on them with your mouse, the words underlined in yellow like this connect you to a definition

from the Glossary. The words underlined in green like this take you to another web site, lesson or module.”

III. Application of Information and Communication Technology

Attribute 1. Delivery Platform

Question 1a. Can the delivery platform support various types of media?

Seven selected courses were delivered via Lotus Notes LearningSpace with access via browser and Notes client. The rest of three courses were web-only rendered based on HTML and Java script. Both delivery platforms support different types of media.

Question 1b. Can the student participate in learning activities without leaving the delivery platform?

Among seven courses using the Lotus Notes LearningSpace as the delivery platform, students in course No.1, No.4, No.6 and No.9 had to leave the delivery platform to review the audio-visual CD-ROM presentations. The following is a typical example of an instruction given to students in above courses:

To see this presentation, you (students) will need to minimize this window (click on the minus sign in the upper right hand corner of the screen). Then double click on the icon labeled “My Computer”. Next, double click on the icon for your CD-ROM drive. You (students) will find several files. Double click on the one labeled “Module1.exe.”

Course No.2 and No.5 had designated video presentations in the instructional materials as well. However, instead of separating media files from the delivery platform, they utilized the functions built in Lotus Notes LearningSpace by attaching these media files in the MediaCenter (a module designed in LearningSpace to serve as container for a wide variety of file-objects and digital media such as video, and sound) within Notes so that students could view all the course

materials without leaving Notes. However, in one test it did take the researcher approximately 1 hour to (completely) replicate the media files to a client workplace of Lotus Notes earningSpace, versus to subsequently open the files in seconds via web browser for incremental viewing.

Question 1c. Is the delivery platform stable?

Both, HTML-/Java-based web-only rendering and the Notes Domino server, had been tested as fairly stable delivery platforms. This judgment is again based on tests during the evaluation period from March 20 to June 20, 2000, where the researcher had successfully logged in ten times during various time periods of the day for each selected course.

Attribute 2. Maximize Use of Technology

Question 2a. Does the course integrate proper technology to facilitate learning in the online environment?

All courses had integrated technologies properly to design, instruct, and facilitate online learning.

Question 2b. How many different types of technologies and/or media (e.g. animation, video conferencing, simulation, presentation software, Internet links, etc.) have been used in the course?

Summary of the collected data in Appendix C (see p.126) shows that course No. 2, No. 5 and No. 9 scored 0 because they integrated more than four types of technologies and/or media in the instructional materials. There were three different kinds of technologies and/or media used in course No. 1, No. 6, No. 7, No.8 and No. 10. Finally, course No.3 and No. 4 had been given score 2 because both courses used only two types of technologies and /or media.

The analysis of data from detailed comment sections in each course, as summarized in Table 3, also discloses interesting findings by using frequency count.

Table 3

Frequency Counts of Applications of Information and Communication Technologies Used
Among Ten Courses

Type of technology /media	Frequencies
Asynchronous Online discussion tools	10
The Internet: Hyperlinks	9
Presentation Software	5
Streaming video & audio	3
Online synchronous conferencing tools	2
Animation Tools	1
Simulation (web-based)	1

Table 3 indicates the most frequently used technology/media for online courses are the online discussion tools, e.g. whiteboard, or e-mailing. Hyperlinks were ranked in second place as an information access tool. Presentation software, such as the Lotus Notes ScreenCam, MS PowerPoint, was often used as content rendering tool to present the course materials.

Streaming video and audio technology, followed by online synchronous conferencing tools had not been applied to the courses' design very often. Animation and simulation tools were the least utilized among the ten selected online courses.

Attribute 3. Accessibility to All Elements to Achieve the Objective

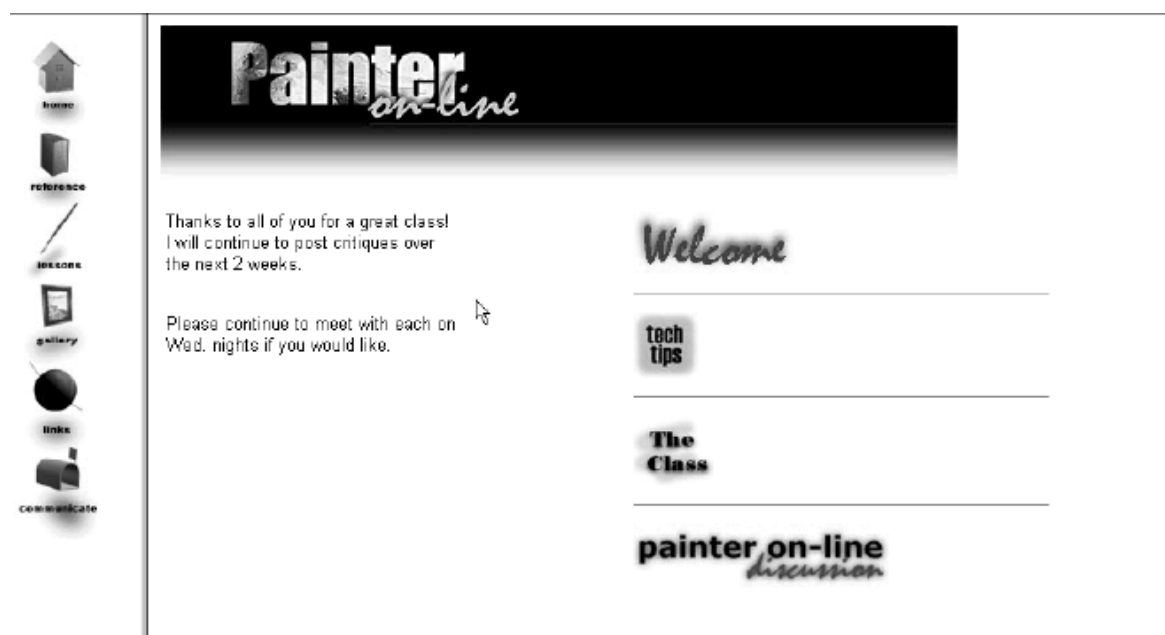
Question 3a. How intuitive is navigation within the delivery platform to new users?

As mentioned, there were two major delivery platforms, the Lotus Notes LearningSpace and HTML-/Java-based web solutions. Lotus Notes LearningSpace has four intuitive modules

designed for online learning and teaching, “Schedule”, “CourseRoom”, “MediaCenter”, and “Profile”. All the courses delivered using LearningSpace were scored 2, as fairly intuitive.

Figure 10.01

Illustration of Non-Intuitive Design of Navigation within the Delivery Platform



Among the other three web-based courses, course No.3 and No.10 were very well designed online courses with respect to intuitive navigation to new users solely based on HTML.

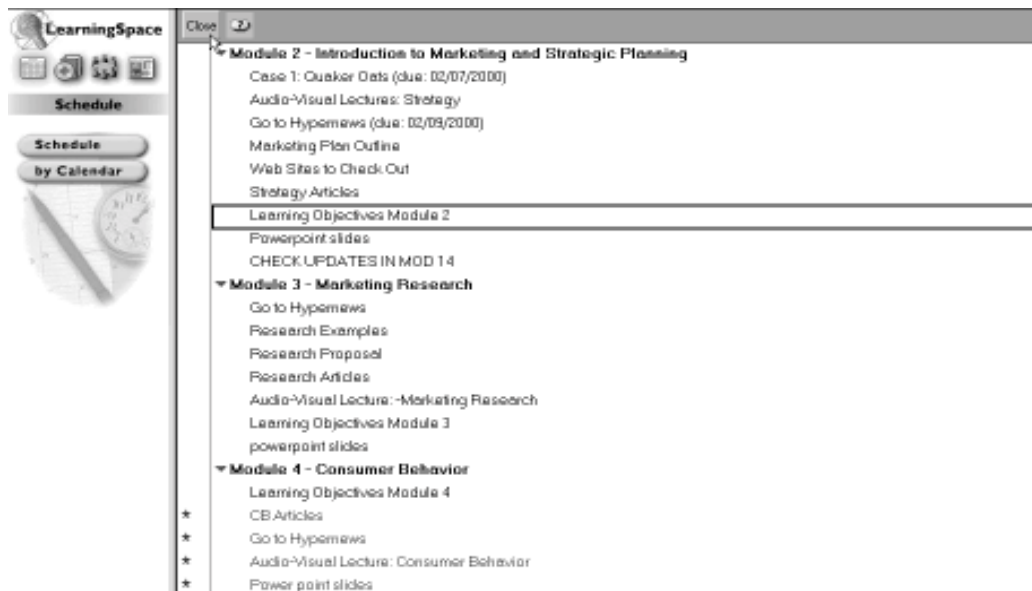
Course No.7 (see Figure 10.01) was likely to cause some confusion to new users with its navigation buttons, for example, “the class” versus “the lessons”, “communicate” versus “painter online discussions”.

Question 3b. Is the course easy to navigate?

In order to avoid overwhelming students by technology, easy navigation within the actual instructional materials has to be given high priority in course design. Appendix C (see p. 126) indicates six courses were fairly easy to navigate, except course No.6, which was not.

Figure 11.01

Illustration of Navigation Design That Causes Confusions for Users



It was found difficult to gain and maintain proper orientation in course No. 6 because of its unstructured learning activities sequences. As shown in Figure 11.01, the learner in this course is quite likely to get lost or distracted by subsequently being directed to quite different contextual environments: 1) an online discussion forum, HyperNews, outside the delivery platform, Lotus Notes LearningSpace; 2) then, coming back to the course; 3) then, leaving the delivery platform again to view CD-ROM presentations. In addition, the learning objectives of the course were often presented at the end, but in some cases they were at the very beginning of the module.

Course No.1, No.5 and No10 were ranked excellent under this category because they had specifically included an orientation page to direct students how to move within the instructional materials, between the various entries.

Summary

In summary, this chapter describes the findings of an empirical study within the context of the specifically devised design template for online courses. Each online course was evaluated separately with respect to its content design. Table C-1 in Appendix c, p.126 was developed to display the evaluation result of each yes/no and qualitative question of ten courses within three sections of the design template. This helped the researcher analyze and summarize the design issues of the ten online courses.

With respect to the criteria set “facilitation of online learning” course No.1, No.2, and No.9 showed the best design elements over the rest of the courses. Other selected courses often fell short at lacking for consideration of the competency levels based upon learner’s previous experiences, and the lack of role assigning as well as requirements for peer evaluations within group works. In addition, nine out of ten courses did not have procurements for interactions with outside experts or invited guests’ lectures online. Of ten selected courses, seven did not indicate when the student would expect to get feedback from the instructor.

Time flexibility is a core advantage of online learning and teaching as mentioned in the reviewed literature. The findings of the study shows that all courses had given students time flexibility to study course materials and accomplish learning activities. At the same time, all courses had mixed different levels of online learning activities into instructional design.

Within the evaluation of “content presentation”, one often forgotten point of designing online courses was to construct ‘short pages’ for content presentation. Only course No.2 took care of designing short pages in order to enhance the speed of access of the end user. In addition, icons/colors were applied to the design of the ten online courses design, but only course No.10 had explained the meaning of colors used in the instructional materials.

The findings of section three on ‘information and communication technology’ reveal that all ten courses had applied stable delivery platforms. However, the results obtained from the ten evaluated online courses did not offer a broad and diverse picture of the application of information and communication technology to online learning. As shown in table 3 (p.85), asynchronous online discussion, Internet links, and presentation software were on the top of the list of technology applications. Streaming video, audio, animation, simulation software were rarely used among the ten courses.

CHAPTER FIVE

SUMMARY, CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

Summary

This empirical study was to determine the instructional design of ten selected online courses that meet the need of interactive and collaborative online learning needs. The particular purpose of the study was to identify issues in designing online courses by comparing these ten Internet based classes based on an assessment template designed by the researcher and proved by the members of research committee. The second purpose was to portray the types of instructional design methods and technologies applied among these courses. The results of this study are possibly elucidating a set of criteria for enhancing the quality of online instructional design, and the quality of facilitating online distance learning.

This chapter provides a summary of the review of literature, research questions, research design and procedure, and findings of the study. Conclusions and implications are discussed, followed by recommendations for future research projects.

Literature Review

The review of literature was conducted and established to research material relevant to the stated problem and various up-to-date insights into applications of information and communication technology in distance education. The review of literature provides background knowledge on: i) the return of lifelong learning; ii) the growth of the Internet and the World Wide Web; iii) online learning – one solution to the demand of lifelong learning; iv) benefits of asynchronous learning; v) learning styles and online distance learning; vi) theories of online instructional design.

The innovations and advance of information and communication technology have changed the infrastructure of our society from an industrial-based economy to a knowledge-based one (Davis, 1996; Finke, 2000). In addition, there is no doubt that the Internet and the World Wide Web are accelerating the speed of globalization, and, at the same time, shortening the circle of knowledge by providing efficient and low-cost access to information virtually everywhere on the world. Consequently, more and more nations and business entities recognize that educating their people in a lifelong circle is crucial to retain a competitive edge in the global market (The U.S. Department of Education, 1997; Crofts, 1998; Industry Canada, 1997). For the individual, learning becomes a lifelong requirement and a survival skill in the job market (Hake, 1999; Miller, 1996).

As a result of lifelong learning, the traditional on-campus, classroom learning simply cannot accommodate their expanding educational clientele, which expands from 16 years old to 67 years old. And, no government has planned to support such a massive learning demand with only limited resources available (Bates, 1995; Dolence and Norris 1995; Morrison, 1998).

Thanks to the amazing growth and development of the Internet and the World Wide Web online asynchronous learning has taken off to complement classroom learning, and thus possibly meet the demands of lifelong learning (Finke, 2000).

Governments, business corporations, and academic institutions are seizing the advantages of online asynchronous education to leverage instructions to the learner's desktop (Selwyn & Gorard, 1999; Becker, 1999; Dugan, 1998). The growing popularity of online learning is due to a combination of various contributing factors: Technological advances, the increasing demand from learners to acquire education at times that are convenient given their intense schedules and personal commitments, and the economic benefits of distributing scarce resources geographically

and temporally to learners in remote locations (Ahn, 1999). Last, but not the least, online collaboration is the "sweet spot" of the whole online learning experience, with the ability to make connections with diverse ideas and people, further, with the ability to create new context, new relationships, and new networks world wide. The learners will learn, and they will learn from each other to seize the knowledge through a virtual learning community (Logan, 2000).

The potential of online learning is tremendous, yet, to apply technology to instructional design and to make it effective and efficient for learners is still new to instructors and course designers. The concurrent literature shows a variety of arguments on the relation between learning styles and online distance learning. Most of the theories have their roots in classroom learning and teaching, though. The researcher presents pertinent schools of thought as well as multiple learning theories and practices inherent in the online learning environment. The concepts range from the perceptual/ personality dimension, over a cognitive/information processing dimension and an affective/social dimension to multiple intelligence theory.

Besides considering different learning styles needs of learners while designing online courses, the recent debate on online instructional design has been focusing on two schools of theories: behavior objectivism versus cognitive constructivism. The pioneers of online course designers advocate the latter one, cognitive constructivism as the ground theory of online instructional design. The two designing theories are to be considered as two extremes of one pole. The cognitive constructivism recognizes the ability of human beings as active entities to process information and humans as being able to construct knowledge based upon their previous experience (Gardner and Veenema, 1996; Jarvis, 1999). Contradictorily, behavior objectivism emphasizes a passive process of given and absolute objective knowledge of humans; by controlling rewards and punishments, people's behavior can be shaped by the controller /

instructor (Cohen 1987; DeMar, 1988). Either theory has its strength and weakness. When it comes to online course design, much depends on what level of learning objective the course intended to achieve, and the different characters of audiences.

Last, the review of literature reveals the need of research on online instructional design issues (Hana & Kling, 1999). The technology is new, the demand of learning is increasing, the "Guide on the Side" way of teaching is replacing by "Sage on the Stage" style. Thus, it truly needs a different mindset to invent an electronic platform providing a collaborative learning environment which is learner-centered and accommodates different learning styles, needs, and expectations.

Research Questions

The problem of the empirical study was to compare and analyze the instructional design of ten selected online courses with respect to the evaluation criteria classes: i) facilitation of online learning, ii) content presentation, and iii) application of information and communication technology. Based upon an assessment template, it was asked to what extent the online courses are meeting the need of online collaborative learning with respect to the explicated three criteria classes. The study sought to discover answers to the following questions:

1. What attributes are the fundamental requirements of a good practice of online course design?
2. What are the differences and similarities of the ten selected online courses with respect to the instructional design based upon the developed assessment template?
3. What are the strength and weakness of instructional design among the selected online courses?

Design and Procedures

The data for this study were gathered during the spring semester of 2000. An online course assessment template was developed by the researcher, and advised by experts in the field of online instructional design. After several revision cycles the template was finally approved by three thesis committee members of this research project. The assessment template contained questions pertaining to sixteen attributes that were divided into three sections defined by the above mentioned criteria classes i) through iii).

Having the limitations of financial resources and time in mind, members of the research committee suggested a list of potential courses for the evaluation sample. After considering a variety of restricting aspects of the potential sample, the researcher identifies ten exclusively online delivered courses. Except for one course which was delivered by five post-secondary institutions from Canada, the remaining selected courses were from the US, two universities in Wisconsin, one university in Maryland, and one course was offered by an affiliated higher educational group in Michigan.

The available data from the ten courses were analyzed by the researcher. The findings of the study were presented within the context of the design evaluation template. Quality factors regarding facilitating online learning were discussed. Data regarding electronic content presentations were analyzed according to technologies used for content renderings. The types of technologies applied in online instructional delivery were summarized.

Findings

The assessment template was used twice for the evaluation of the ten selected courses. It was first applied to the individual course; then, it was used again to summarize the overall strengths, and weaknesses of the ten online courses.

The qualification of binary attributes was denoted by "yes/no questions", being mapped to a 0 or 1 ranking, more qualitative questions were ranked on a scale from 0 to 4. The ranking pattern of each course based on the attributes with respect to the three evaluation criteria classes assisted the researcher to distinguish differences and similarities of online instructional design among the ten selected courses.

In summary, with respect to criteria class i) "facilitation of online learning", most courses showed a certain lack of considering the competency levels based upon learner's previous experiences, and of sufficiently considering role assigning as well as requirements for peer evaluations within group works. Only one course had taken into consideration the support of outreaching expertise. The majority of the courses did not have procurements for interactions with outside experts or invited guests' lecturers online.

According to the data available from the ten courses, a mixture of narrative and commenting feedback was often given to students for their inquiries. Of ten selected courses, seven did not indicate when the student could expect to get feedback from the instructor.

Within the ten courses, to read and discuss asynchronously were on the top of list of online learning activities. In addition, collaborative projects and online research shared the third place. Case studies, problem-based assignments, synchronous discussions, actual online practice, and virtual field trips were less integrated as learning activities.

The findings of the study show that all courses had given students time flexibility to study course materials and accomplish learning activities. This was pointed out as one big advantage of online asynchronous learning in the literature review (Ahn, 1999, Becker, 1999). At the same time, all courses had applied different levels of online learning activities into their respective instructional design.

With respect to criteria class ii) "content presentation" paper-based text was still the No. 1 content rendering mechanism in online instructional design, followed by audio-visual presentations (e.g. CD-ROM, ScreenCam [a tool from Lotus Development], PowerPoint [Microsoft]). Streaming video and audio were not utilized often.

A prevailing pattern of content presentation among the ten courses was to present long pages on one screen. Only course No. 2 took care of designing short pages in order to enhance the speed of access of the end user. In addition, icons/colors were applied to the design of the ten online courses' design. But, only course No. 10 had explained the meaning of colors used in the instructional materials.

The findings of iii) "application of information and communication technology" revealed that all ten courses had applied stable delivery platforms. However, the results obtained from the ten evaluated online courses did not offer a broad, and feature rich picture in the degree of application of information and communication technology options currently available to online learning. Tools for asynchronous online discussion, Internet links – hyperlinks and presentation software were on the top of the list of technology applications. Streaming video, audio, animation, simulation software were rarely used among the ten courses.

Conclusions

The following conclusions have been drawn on the basis of data gathered among the ten selected courses in this empirical study.

The results indicated that although the conventional way of teaching in a classroom scenario obviously had strong impact on constructing courses via the Internet and the World Wide Web, however, the instructional design theory of cognitive constructivism was favored by the online course designers and instructors.

The constructivist values support the use of opportunities for learners to engage in online distance learning experiences as a means of challenging learners to construct their own meaning with the help of others in a collaborative learning environment. Teachers are more or less like guides, facilitators, and directors (Lebow, 1993; Jonasson, [On-line]).

In the opinion of the researcher, the strong influence of classroom teaching can be derived from the frequency counts in table 1 (p. 63), and table 2 (p.64), as "reading" was the primary learning activity, and "paper-based text" was the basic way of delivering content materials to learners. Furthermore, according to the collected data, none of the courses considered the participants' previous experiences in delivering and enacting the online courses, though nine out of ten courses were pertinent to adult learners.

The innovations of the World Wide Web and the Internet make it possible to access, utilize, and collaborate with an amalgam of experts and peers regardless of time and physical constraints (Zuboff, 1998). Via the Internet and the World Wide Web, these collaborative relationships afford opportunities to utilize distributed resources extending the learning environments to encompass multiple campuses, libraries, equipment and laboratories, technical expertise and human resources (Rice, McBride, Davis, 1998). According to the findings to question No. 5a for criteria class "facilitation of online learning", half of the evaluated courses did take advantage of the "sweet spot" of online learning to construct and facilitate any collaborative projects/group works. Yet, significantly, only one out ten courses had been designed to draw knowledge from other experts besides the instructor into its online learning environment. None of the courses supported guests' lectures.

Above all, it is reasonable to conclude that among the evaluated courses, instructors and designers need to rethink specifically with respect to constructing and facilitating a collaborative online learning community.

The researcher concluded that the level of visual appealing and user-friendliness did not appear to match the standards in user interface design found in widespread PC-based productivity tools or in web presentations.

The data collected in the criteria class "content presentation" indicated that after succeeding in structured information presentation and stable delivery platforms, in the next step, the instructors and course designers need to improve on the user interface attractiveness and the level of user-friendliness (e.g. design short pages on screen; explain the meaning of icons and colors being used; use more context oriented visualization; improve flexibility and layout of navigational schemes and structures; improve on cross-referencing and complementary / alternative content sequencing paths).

The results of table 3 (p. 85) identified typical computer-based tools and concepts used for asynchronous discussions and deliberations. Hyperlinks were the most frequently used concepts among the ten selected courses. This result indicated that the application of up-to-date information and communication technology options to online instructional design was on a rather rudimentary level compared to the sheer number and variety of innovative and sophisticated tools available on the market and being eligible for delivering, presenting, and facilitating online courses.

Implications

The results from this study indicated that the integration of computer based technologies as delivery support mechanisms for instructional design is still on its infancy stage. The impacts

of classroom teaching still dictate the design of online courses with a strong focus on reading the text; this was the dominantly found procedure to achieve learning objectives. Outreaching expertise leveraged by ample use of information and communication technology was missing quite often in the design of the analyzed online courses.

The data analysis suggested that in further training of online instructors and designers much emphasis should be given to a careful explication of the pedagogical differences as well as similarities between online learning and classroom teaching. Furthermore, professional technical training is needed for enhancing the skills in design with respect to user-friendliness, creative use of computer-based content rendering tools, or the level of visual appealing.

The finding of the study suggested that offering innovative collaborative projects online did generate a unique, real-world experience for students. However, organizing and facilitating such a project online is a challenge for both, the instructors and the learners.

Courseware developers may infer from the analysis of this study that putting emphasis on creating elegant computer based tools for enabling and enacting collaborative learning environments is apparently worth the efforts. A result of such tools would be eliminating technical headache and freeing resources for instructors who may solely put efforts on facilitating learning.

Recommendations for future research

Online learning will be a substantial part of lifelong education in the 21st century. This study addressed its importance and explored how to deliver instruction by using information and communication technology. The researcher offers the following recommendations for future research in the field of study.

The findings of this study are based on data collected from ten online courses in North America. This, in addition with the scale and scope, as well as the selection criteria of the study, limits the generalization of the results. It is obvious that in future similar research, an increased number of courses, over an expanded range of regions, with more appropriate and unrestricted selection criteria for the sample may eliminate regional and cultural bias and enhance the validity of the findings.

This study is an empirical study using an assessment template centered model based on the researcher's field experience. It is recommended that more similar model oriented studies could be done on the same topic by gathering data from randomly selected populations.

The assessment template developed by the researcher and approved by the research committee members is an open-ended design or evaluation instrument. The template contains sixteen attributes in three criteria classes focusing on design of an online collaborative learning environment. Further studies may research on more attributes and an enhanced set of criteria classes that are essential for delivering quality courses online by emphasizing different objectives (i.e. learner-centered learning, adult learning, professional training, etc.).

For the study only limited information was available on participation by learners as well as backgrounds of instructors or course designers in the used sample of selected courses. Little data are available on criteria like effectiveness and efficiency in design of online learning and teaching. Given the notorious resource bottlenecks in the public educational sector, or the profitability requirements of commercialized training, additional information knowledge in these areas seems indispensable in further training of course designers and instructors.

In summary, this study can only be regarded as a snapshot of an evolution with many facets, most of them apparently in hasty development or still in their infancy. After having

finished the analysis in this exciting area it is the researcher's remaining impression that she has worked on a variety of subjects with an overall impact rather chronicling a revolution than an evolution at the verge of the 21st century.

REFERENCE

- Ackermann, E. (1996). Tools for teaching: The World Wide Web and a Web Browser. [Online]. Available: <http://www.mwc.edu/ernie/facacad/WWW-Teaching.html> (February 28, 2000)
- Ahn (1999, November 19). Future of continuing education filled with changes, choices. Boston Business Journal, 19(41). 41.
- Anderson, J. R, Reder, L.M. & Simon, H. A. (199?). Applications and Misapplications of Cognitive Psychology to Mathematics Education. Retrieved February 20, 2000 from the World Wide Web: <http://sands.psy.cmu.edu/personal/ja/misapplied.html>.
- Bates, A. W. (1995). The future of learning. First Presented at the Minister's Forum on Adult Learning, Edmonton/Alberta, November 30 – December 1st. Retrieved February 9, 2000 from the World Wide Web: <http://bates.cstudies.ubc.ca/learning.html>
- Becker, G. S. (1999, December 27). How the Web is revolutionizing learning. Business Week, 3661, 40.
- Ben-Jacob, M.& Levin, D.S. (1998, January 1) Collaborative Learning: A critical Success Factor in Distance Education. Distance Learning '98. Proceedings of the Annual Conference on Distance Teaching & Learning (ERIC Document Reproduction Service, No. ED 422843)
- Berger, N. S. (1999, December). Pioneering Experiences in Distance Learning: Lessons Learned. Journal of Management Education, 23(6), 684-691
- Berthon, P., Leyland, F., Pitt, F., & Watson, R. T. (1996). The World Wide Web as an Advertising medium: Toward an Understanding of Conversion Efficiency. Journal of Advertising Research, 36(1), 43-54.

Black, E. (1995, June 13). Behaviorism as a learning theory. Retrieved February 17, 2000 from the World Wide Web: <http://129.7.160.115/inst5931/Behaviorism.html>.

Boisvert, L. (2000). Web-Based Learning. Information Systems Management, 17(1), 35-41.

Briggs, R. & Hollis, N. (1997). Advertising on the Web: Is There Response before Click-Through? Journal of Advertising Research, 37(2), 33-45.

Brandt, D.S. (1997, September). The multiple personalities of delivering training via the Web. Computer in Libraries, 17(8), 51-53.

Clarker, R. D. (1999, April) Going the distance. Black Enterprise, 29(9), 113-117.

Checkley, K. (1997, September). The First Seven...And The Eighth – A Conversation With Howard Gardner. Educational Leadership, [online serial], 55(1). Retrieved February 6, 2000 from the World Wide Web: <http://www.ascd.org/frameedlead.html>.

Chute, A. G.; Hancock, B. W.; Balthazar, L. B. (1991). Distance Education Futures: Information Needs and Technology Options. Retrieved February 16, 2000 from the World Wide Web: <http://www.lucent.com/cedl/distance.html>.

Cohen, D. (1987). Behaviorism. In R.L. Gregory (Ed.), The Oxford Companion to the Mind (pp71). New York: Oxford University Press.

Cook, D. L. (1995). Community and computer-generated distance learning environments. In M.H. Rossman and M.E. Rosseman (Eds.), Facilitating Distance Education. New Directions in Adult and Continuing Education, (p. 67). San Francisco: Jasley-Bass Publishers.

Crofts, P. (1998, July 23). Learnt Offerings. People Management, 4(15), 54.

Curry, L. (1987). Integrating concepts of cognitive or learning style: A review with attention to psychometric standards. Ottawa, ON: Canadian College of Health Service Executives.

Davis, S. (1996, September). Slicing the learning pie. Educom Review, 31(5), 32.

DeMar, G. (1988). Excerpt used from Surviving College Successfully: A Complete Manual for the Rigors of Academic Combat. Retrieved March 1, 2000 from the World Wide Web: http://www.forerunner.com/forerunner/X0497_DeMar_-_Behaviorism.html.

Donlan, T. F. (1995, April 25). Successful marketing on the Internet. Privacy and Security, 51.

Dugan, S. (1998). Internet Fuels Training Market. InfoWorld, 20(36), 77.

Dunn, R., & Dunn, K. (1978). Teaching students through their individual learning styles: A practical approach. Reston, VA: Reston Publishing.

Ertmer, P. A., & Newby, T. J. (1993). Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. Performance Improvement Quarterly, 6(4), 50-70.

Filipeczak, B. (1995). Putting the Learning Into Distance Learning, Training 32(10), 111-118.

_. (1997, December). Are you wired enough? Training, 34(12), 34-39.

Finke, W. F. (2000). Lifelong Learning In The Information Age. Bueren, Germany: Fachbibliothek Verlag.

Flynn, A. (1995, July, 27). World Wide Web to be utilized in Tri-Lakes-Local officials predict tourism boost from superhighwa. Adirondack Daily Enterprise.

Frost, R.D. & Strauss, J. (1997). The Internet: A New Marketing Tool. Englewood Cliffs, NJ: Prentice hall.

Foley, R. T. (1998, May). Train Smart, Not Hard. Lodging, 54(5), 27.

Galilei, G (1610). Sidereus Nuncius translation by A. V. Helden, (1989). Chicago, U.S.A, The University of Chicago Press. Retrieved February 3, 2000 from the World Wide Web:
<http://www.stcloudstate.edu/~physcrse/astr106/siderius.html>

Gardner, H. & Veenema, S. (1996). Multimedia and Multiple Intelligences. The American Prospect Online, 29. Retrieved February 8, 2000 from the World Wide Web:
<http://www.prospect.org/archives/29/29veen.html>.

Giddens. A. (1991). Modernity and Self-Identity. Cambridge, Britain, Polity Press.

Ginsberg, S.(1997, February 3) Hospitality Partners Tackles the Tacky Tourist Online a MD. Firm Has The Answers For Potential Area Visitors. Washington Post, p. F10.

Glossbrenner, A. & Glossbrenner, E. (1995). Making money on the Internet. New York, NY: McGraw-Hill.

Gordon, J. (1997). Infonuggets: The bite-sized future of corporate training. Training, 34(7), 26-33.

Good, T. L. & Brophy, J. E. (1990). Educational psychology: A realistic approach. (pp. 187). White Plains, NY: Longman.

Green, K.C. (1999, February 1). Campus Computing, 1998. The Ninth National Survey of Desktop Computing and Information Technology in American Higher Education. Campus Computing, Encino, CA. (ERIC Document Reproduction Service, No. ED 428645)

___ (1999, March). When wishes come true. Change, 31(2), 10-15.

Greengard, S. (1998, May 4). Going for distance. Industry Week, 247(9), 22-25.

Griggs, S. A. (1991, December 31). Learning styles counseling. Michigan, US. (ERIC Document Reproduction Service, No. ED341890). Retrieved March 5, 2000 from the World Wide Web: http://www.ed.gov/databases/ERIC_Digests/ed341890.html.

Hagevik, S. (1998, April). Living with constant change: The future ain't what it used to be. Journal of Environmental Health, 60(8), 32-33

Hake, B. J. (1999). Lifelong learning in late modernity: The challenges to society, organizations, and individuals. Adult Education Quarterly, 49(2), 79-91

Hana, N. & Kling, R. (2000, March 20). Students' Distress with a Web-based Distance Education Course. Retrieved February 16, 2000 from the World Wide Web: <http://www.slis.indiana.edu/CSI/wp00-01.html>.

Hanna, D. E. (1998, March). Higher Education in an Era of Digital Competition: Emerging Organizational Models. Journal of Asynchronous Learning Networks, [online serial], 2(1). Retrieved February 6, 2000 from the World Wide Web: http://www.aln.org/alnweb/journal/jaln_vol2issue1.htm.

Harasim, L. M. (1990). Online Education: An Environment for Collaboration and Intellectual Amplification. In L. M. Harasim (Ed.), Online Education: Perspectives on a New Environment. New York: Praeger, 1990.

Hartman, V. F. (1995). Teaching and learning style preferences: Transitions through technology. VCCA Journal 9(2), 18-20.

Harvey, B. (1997). An Expanded ARF Model: Bridge to the Accountable Advertising Future. Journal of Advertising Research 37 (2), 11-20.

Heeren, E. & Lewis, R. (1997). Selection communication media for distributed communities. Journal of Computer Assisted Learning, 13(2), 85-98.

Hicks, J. (1995, July). Some active learning implications of the information era. Using the Internet for teaching [Online serial], 2. Retrieved February 10, 2000 from the World Wide Web: <http://www.cti.ac.uk/publ/actlea/issue2/index.html> (February 10, 2000)

Hiltz, S.R. & Turoff, M. (1993). The Network Nation: Human Communication via Computer. Revised edition, Cambridge MA: MIT Press. .

Hoffman, D.L. & Novak, T. P. (1996). Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations. Journal of Marketing, 60, 50-68.

Industry Canada. (1997, October 8). Preparing Canada for a digital world. Retrieved February 28, 2000 from the World Wide Web: <http://strategis.ic.gc.ca/SSG/ih01650e.html> (February 28, 2000)

Ingersoll, B. (1998, April 16). High-tech industries led by Internet, boost U.S. growth and rein in inflation. The Wall Street Journal, B11.

James, W. B. & Gardner, D. L. (1995). Learning style: implications for distance learning. New Directions For Adult And Continuing Education. (pp. 19-31). San Francisco, CA: Jossey-Bass Publishers.

__. & Blank, W. E. (1991). A comparison of adults' perceptual learning style and their educational level. Mountain Plains Adult Education Association Journal of Adult Education, 19(2), 11-21.

Jana, R. (1999, September 13). Getting the most out of online learning. InfoWorld, 21(37), 119.

Jarvis, P. (1999, June). Global trends in lifelong learning and the response of the universities. Comparative Education, 35(2), 249-257.

Jonassen, D. H. (1991) Objectivism versus constructivism: do we need a new philosophical paradigm? Educational Technology Research and Development, 39 (3), 5-14.

Kanevsky, D. & Housel, T. (2000). The learning-knowledge-value cycle: tracking the velocity of change in knowledge to value. Retrieved February 28, 2000 from the World Wide Web: <http://www-rcf.usc.edu/~housel/paper1/valuecycle.html>.

Kantor, A. & Michael N. (1996, December). Off the Charts: How Big is the Internet? How Many People Use It? What Do We Know about Them? How Much Commerce Is Being Conducted Online? Internet World.

Kassaye.W.W. (1997). Global Advertising and the World Wide Web. Business horizons.

Kautzman, A. M. (2000). How I Learned to Stop Worrying and Love the Internet. Searcher, 8(1), 117-120.

Kaydo, C. (1998) Good service travels fast. Sales & Marketing Management, 150(5), p22.

Keefe, J. W. (1989). Learning style profile handbook: Accommodating perceptual, study and instructional preferences. Reston, VA: National Association of Secondary School Principals.

Kennedy, K. (1998, February). The Internet: Training's New Power Tool. Hotels, 32(2), 26.

_. (1998, July). Training budgets up, planning is out. Hotels, 32(7), 28.

Kerka, S.(1996). Distance Learning, the Internet, and the World Wide Web. ERIC Digest. ERIC Clearinghouse on Adult, Career and Vocational Education, Columbus Ohio. ED395214.

Khan, B. H. (1997). Web-Based Instruction (WBI): What It Is and Why Is It? Web-Based Instruction. In B. H. Khan (Ed.). Web-Based Instruction (pp5-18). NJ, Englewood Cliffs.

Kirk, E. & Bartelstein, A. (1999, April 1). Libraries Close in on Distance Education. Library Journal, 124(6), 40-42.

King, K. P. (1998). Course Development on the World Wide Web. In B. Cahoon (Ed.), Adult Learning and the Internet (pp.55). San Francisco, CA: Jossey-Bass Publishers.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice-Hall.

Kreitzberg, C. B (1998, June 15). Distance Learning isn't going the distance. Internet Week, 45.

Kubala, T. (1998). Addressing Student Needs: Teaching on the Internet, T.H.E. Journal, 25(8), 71-74.

Laurillard, D. (1993). Rethinking University Teaching: A Framework for the Effective use of Educational Technology. New York: Routledge.

Lebow, D. (1993). Constructivist values for instructional systems design: Five principles toward a new mindset. Educational Technology Research and Development, 41(3), 4-16.

Lea, M. & Spears, R. (1991). Computer mediated Communication, De-individation and Group Decision-Making. In S. Grenberg (Ed.), Computer Supported Cooperative Work and GroupWare. Orlando: Academic Press.

Logan, M. (2000). Interactivity, learning relationships and online collaboration. Retrieved February 3, 2000 from the World Wide Web: <http://www.moebiusinc.com/interactiv.htm>

Lubbers, R. (1998, November). The Dynamics of Globalization. Retrieved February 25, 2000 from the World Wide Web: <http://www.globalize.org/publications/dynamics.html>

- Maddox, L. & Mehta, D. (1997). The Role and Effect of Web Address in Advertising. Journal of Advertising Research, 37(2), 47-59.
- Mateyaschuk, J. (1999, May 17). Computer Cramming. InformationWeek, 734, 122.
- Mayadas, F. (1997, March). Asynchronous Learning Network: A Sloan Foundation Perspective. Journal of Asynchronous Learning Networks, 1(1), 1-16.
- Mergel, B. (1998, May). Instructional design & learning theory. University of Saskatchewan Professional and Theoretical Issues in Educational Technology: Occasional Papers. Retrieved February 5, 2000 from the World Wide Web:
<http://www.usask.ca/education/coursework/802papers/>
- Myers, I. (1978). Myers-Briggs Type Indicator. Palo Alto, CA: Consulting Psychologists Press.
- McCartney, L. (1996, November 4). Virtual MBA. InformationWeek, 604, 33-37.
- McChesney, R. W. (1996). The Internet and U.S. Communication Policymaking in Historical and Critical Perspective. Journal of Communication, 46(1), 98-124.
- McManus, T. (1995). Special considerations for designing Internet based education. In D. Willis, B. Robin, & Willis, J. (Eds), Technology and Teacher Education Annual. Charlottesville, VA: Association for Advancement of Computing in Education.
- Miller, M. W. (1993, November 15). Contact High. The Wall Street Journal, R4.
- Miller, S.E. (1996, May/June). Beyond the classroom. Educom Review, (31)3, 13.
- Mitchell, R. (1995, March 20). Safe Passage in Cyberspace: theft-Proof Credit Card Travel means Cybertrade Can Take Off. Business Week, 33.

- Morrison, J. (1998). Higher Education in 2010: An Interview with Rodney L. Everhart
Retrieved February 23, 2000 from the World Wide Web: <http://horizon.unc.edu/TS/vision/1999-11.asp>.
- Mottl, J. N. (1998, October 5). Online training gets Good Grades. Internet week, 35.
- Natesan, N. C. & Smith, K. H. (1998). The Internet Educational Tool in the Global Marketing Classroom. Journal of Marketing Education, 20(2), 149.
- Newhagen, J. E. & Rafaeli, S. (1996). Why Communications Researcher Should Study the Internet: A Dialogue. Journal of Communication, 46(1), 4-13.
- Nipper, S. (1989). Third Generation Distance Learning and Computer Conferencing. In R. Mason & A. Kaye (Ed.), Mindweave : Communication, Computers, and Distance Education. (pp.63-73). Oxford, England: Pergamon Press.
- Noble, D. F. (1998 February). Digital diploma mills: the automation of higher education. Monthly Review: An Independent Socialist Magazine, 49(9), 38-52.
- Olson, M. H. & Bly, S. A. (1991). The Portland Experience: A Report on a Distributed Research Group. In B. Cahoon (Ed.), Adult Learning and the Internet (pp.55). San Francisco: Jossey-Bass Publishers.
- Otchet, A. (1998, October). [Www.ooo@online.education](http://www.ooo@online.education). UNESCO Courier, 10, 14-17.
- Parrot, S. (1995). Future Learning: Distance Education in Community Colleges. Eric Digest. ERIC Clearinghouse for Community Colleges, Los Angeles California. (ERIC Document Reproduction Service, No. ED385311)
- Paul. P. (1996). Marketing on the Internet. Journal of Consumer Marketing, 13(4), 27-39.

Perraton, H. (1988). A Theory of Distance Education. In D. Sewart, D. Keegan, & B. Holmberg (Ed.), Distance Education: International Perspectives. (pp34-45). New York: Routledge.

Phillips, F. (1998). Online universities teach knowledge beyond the books. HR Magazine, 43(8), 120-128.

Phillips, V. (1998, January 20). Education in the Electronic Ether: On Being a Virtual Professor. Retrieved March 2, 2000 from the World Wide Web: <http://www.salon.com/21st/feature/1998/01/20feature.html>.

_. (1998, May). Virtual classrooms, real education. Nationa's Business, 86(5), 41-45.

Piaget, J. (1963). Origins of Intelligence in Children. New York: Norton.

Plotnik, E. (1996). Trends in Educational Technology 1995. ERIC Digest, ERIC Clearinghouse on Information and Technology, Syracuse New York. ED398861

Punches, J. (1998). Internet can Save Industry as Effective Marketing Tool. Wood Technology, 125(4), 30.

Rao, S. & Natesan, N.C. (1996). Internet: Threat or Opportunity for India? Media Asia, 23(2), 96-99.

Reichmann, S. W., & Grasha, A. F. (1974). A rational approach to developing and assessing the construct validity of a student learning style scale instrument. Journal of Psychology, 87, 213-223.

Rice, J.C., McBride, R.H., & Davis, J. (1998). Defining a Web-Based Learning Environment. Retrieved March 7, 2000 from the World Wide Web: <http://www.byu.edu/ipt/workshops/wbi/text.html>.

Sangster, A. (1995). World Wide Web – what can it do for education? Active Learning, [online], 2. Retrieved February 10, 2000 from the World Wide Web:

<http://www.cti.ac.uk/publ/actlea/issue2/index.html>.

Saettler, P. (1990). The evolution of American educational technology. Englewood, CO: Libraries Unlimited, Inc.

Selwyn, N. & Gorard, S. (1999, February). Can technology really widen participation? Adults Learning, 10 (6), 27.

Schneider, S.P. & Germann, C.G. (1999). Technical Communication on the Web: A profile of learners and learning environments. Technical Communication Quarterly, 8(1), 37-49.

Schrum, L. (1998). Online education: A Study of Emerging Pedagogy. In B. Cahoon (Ed.), Adult Learning and the Internet (pp.55). San Francisco: Jossey-Bass Publishers.

Schmeck, R. R. (1983). Learning styles of college students. In R. Dillon & R. Schmeck (Eds.), Individual differences in cognition (pp. 233-279). New York: Academic Press.

Schuman, L. (1996). Perspectives on instruction. Retrieved March 6, 2000 from the World Wide Web: <http://edweb.sdsu.edu/courses/edtec540/Perspectives/Perspectives.html>

Schwier, R. A. (1995). Issues in emerging interactive technologies. In G.J. Anglin (Ed.), Instructional technology: Past, present and future. (2nd ed., pp. 119-127), Englewood, CO: Libraries Unlimited, Inc.

Shweizer, H. (1999). Designing and Teaching a Online Course – Spinning Your Web Classroom. Needham Heights, Massachusetts; Allyn & Bacon, A Pearson Education Company.

Smith, P. & Ragan, T. (1993). Instructional design. Upper Saddle River, New Jersey: Prentice-Hall, Inc

Spiro , R. J., Feltovich, P. J., Jacobson, M. J., & Coulson, R. L. (1991) Cognitive Flexibility, Constructivism, and Hypertext: Random Access Instruction for Advanced Knowledge Acquisition in Ill-Structured Domains, In T. Duffy & D. Jonassen (Eds), Constructivism and the Technology of Instruction, (pp. 57-75), Hillsdale, N.J. Lawrence Erlbaum Assoc. Publishers

___ . & Jehng, J. C. (1990), Cognitive Flexibility and Hypertext: Theory and Technology for the Nonlinear and Multidimensional Traversal of Complex Subject Matter. In D. Nix & R. J. Spiro (Eds.), Cognition, Education, and Multimedia: Exploring Ideas in High Technology, (pp. 163-205) Hillsdale, N.J. Lawrence Erlbaum Assoc.

Stage, F. K., Muller, P., A., Kinzie, J., & Simmons, A. (1998). Creating learning centered classrooms. What does learning theory have to say? (ERIC Document Reproduction No. ED 422 777). ERIC Digest. Washington, DC: ERIC Clearinghouse on Higher Education.

Steiner, V. (1985). What is Distance Education. Retrieved February 17, 2000 from the World Wide Web: <http://www.wested.org/tie/dlrn/distance.html>.

Tatar, D.G., Foster, G. & Bobrow, D.G. (1991). Design for Conversation: Lessons from Cognoter. In S. Greenberg (Ed.), Computer Supported Cooperative Work and Groupware. Orlando: Academic Press.

The U.S. Department of Education. (1997). President Clinton's Call To Action for American Education in the 21st century. Retrieved February 17, 2000 from the World Wide Web: <http://www.ed.gov/updates/PresEDPlan/part10.html>.

Thornton, C. (1999). Back to School, Web Style. PC World, (17)7, 41.

Tweney, D. (1999, May 17). Distance learning is no substitute for real-world education. InfoWorld, 21(20), 66.

Vachris, M. A. & Bredon, G. (1999). Teaching principles of economics without 'chalk and talk': The experience of CNU online. Journal of Economic Education, 30 (3), 292-318

Webster, J., & Hacklery, P. (1997). Teaching effectiveness in technology mediated distance learning. Academy of Management Journal, 40(6), 1282-1309.

Werbach, K. (1999, February 19). The architecture of Internet 2.0. Release 1.0 Esther Dyson's Monthly Report.

Wegner, S. B. (1999, November). The Effects of Internet-based Instruction on Student Learning. Asynchronous Learning Networks, [online serial], 3(2). Retrieved February 11, 2000 from the World Wide Web:http://www.aln.org/alnweb/journal/Vol3_issue2/Wegner.htm .

__, Holloway, K. C. & Crader, A. B.(1997, January 1). A Problem-based Approach on the World-Wide-Web. (Eric Document Reproduction Service, No. ED 414 262).

Wiesenberg, F. & Hutton, S. (1996). Teaching a Graduate Program Using Computer-Mediated Conferencing Software. In B. Cahoon (Ed.), Adult Learning and the Internet (pp.55). San Francisco: Jossey-Bass Publishers.

Zahorik, John A. (1995). Constructivist teaching (pp. 11-12). Bloomington, Indiana: Phi Delta Kappa Educational Foundation.

Zuboff, S. (1998). In the Age of the Smart Machine: The Future of Work and Power. New York, NY: Basic Books.

APPENDIX A – HUMAN SUBJECTS CONSENT FORM

Human Research Subjects Consent Form

I understand that by releasing the access of the course, I am giving my informed consent as a participating volunteer in this study. I understand the nature of the study and agree that any potential risks are exceedingly small. I also understand the potential benefits that might be realized from the successful completion of this study. I am aware that the information is being sought in a specific manner and the code will be assigned to the course so that no identifiers are needed and confidentiality is guaranteed. I realize that I have the right to refuse to participate and that my right to withdraw from participation at any time during the study will be respected with no coercion or prejudice.

NOTE: Questions or concerns about participation in the research or subsequent complains should be addressed first to the researcher or research advisor and second to Dr. Ted Knous, Chair, UW-Stout Institutional Review Board for the Protection of Human Subjects in Research, 11 HH, UW-Stout, Menomonie, WI, 54751, phone (715) 232-1126

Signature of the instructor/course administrator:

THANK YOU FOR YOUR PARTICIPATION!

APPENDIX B- ASSESSMENT TEMPLATE

Table B-1

Assessment Template for Evaluating Online Course Design

Attributes to instructional design via Internet/Web

- Assessment Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

- Yes/No questions with the symbol ✓ in front of the question.
0 = Yes, 1 = No

- Qualitative questions with the symbol • in front of the question

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code:

Description:

I. Facilitation of Online Learning

1.	Instructional Objectives and Learning Outcomes	Score	Comments
a ✓	Are learning objectives stated?	(0 1)	
b ●	Are they clear and comprehensive?	(0 - 4)	
2.	Adaptability		
a ✓	Does the course accommodate different learning styles?	(0 1)	
b ✓	Does the course accommodate different teaching styles?	(0 1)	
c ✓	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	
3.	Audience Consideration		
a ✓	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	
4.	Online Learning Activities		
a ●	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	
5.	Positive Interdependence		
a ✓	Does the course encourage group work?	(0 1)	
b ✓	Does the course assign roles to participants within group work?	(0 1)	
c ✓	Does the course require peer evaluations to ensure the even and quality inputs among group members?	(0 1)	
6.	Individual Accountability		
a ✓	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	
b ✓	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	
7.	Interactive Instructional Materials		
a ✓		(0 1)	

	Do the instructional materials promote interaction among students and instructors?		
b ✓	Can the student interact with the material?	(0 1)	
8.	Supporting Resources		
a ✓	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	
b ✓	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	
c ✓	Can the course support interaction with "experts" or guest lecturers?	(0 1)	
9.	Appropriate Feedback		
a ✓	Does the design encourage timely feedback from the instructor?	(0 1)	
b ●	What type of feedback can the instructor provide? (Mixture of diferent types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	

II. Content Presentation

		Score	Comments
1.	Appropriate Organization		
a ✓	Is the course information structured?	(0 1)	
b ✓	Is course information provided at appropriate places?	(0 1)	
2.	Visual Aspects		
a ✓	Are there Help files to assist the user when in the course?	(0 1)	
b ●	Is the design of the user interface attractive?	(0 - 4)	
3.	Ease of Access		
a ✓	Is the course accessible anytime anyplace in general?	(0 1)	
b ●	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	
c ✓	Are segments designed to enhance speed of access (short pages, i.e. <= 3 PageDown)?	(0 1)	
d ✓	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	
4.	Usage of Icons		
a ✓	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	

III. Application of Information and Communication Technology

1.	Delivery Platform	Score	Comments
a ✓	Can the delivery platform support various types of media?	(0 1)	
b ✓	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	
c ●	Is the delivery platform stable?	(0 - 4)	
2.	Maximize Use of Technology		
a ✓	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	
b ●	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	
3.	Accessibility to All Elements to Achieve the Objective		
a ●	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	
b ●	Is the course easy to navigate?	(0 - 4)	

APPENDIX C – SUMMARY OF EVALUATION RESULTS FROM TEN ONLINE
COURSES BASED ON THE ASSESSMENT TEMPLATE

Table C-1

Summary of Evaluation Results of Ten Online Courses Based on the Assessment Template

ID	Questions																																		
	1a	b	2a	b	c	3a	4a	5a	b	c	6a	b	7a	b	8a	b	c	9a	b	1a	b	2a	b	3a	b	c	d	4a	1a	b	c	2a	b	3a	b
01	.	2	.	.	+	.	0	+	.	0	.	.	.	4	.	0/2	+	.	+	.	+	.	1	2	0
02	.	2	.	.	+	.	0	.	.	+	+	.	0	.	.	.	2	.	0/2	.	.	+	.	.	.	0	2	2
03	.	2	+	.	+	.	3	+	+	+	+	+	.	.	.	+	+	+	x	.	.	+	4	.	0	+	.	+	.	.	.	2	0	2	
04	.	2	.	.	+	.	3	.	+	+	.	.	.	+	.	.	+	+	0	.	.	.	4	.	0/2	+	.	+	.	+	.	2	2	2	
05	.	2	.	.	+	.	0	+	+	+	+	.	0	.	.	.	2	.	0/2	+	.	+	.	.	.	0	2	0
06	.	2	.	.	+	.	0	.	+	.	.	.	.	+	.	.	+	+	x	+	.	.	4	.	0/2	+	.	+	.	+	.	1	2	4
07	+	4	.	.	+	.	0	+	+	+	.	.	.	+	.	.	+	+	0	.	.	+	2	.	0	+	+	+	.	.	.	1	3	2	
08	.	2	.	.	+	.	0	+	+	+	+	.	.	.	.	+	+	+	0	+	.	.	2	.	0/2	+	.	+	.	.	.	1	2	2
09	.	2	.	.	+	.	0	+	+	0	.	.	.	2	.	0/2	+	+	+	.	+	.	0	2	2
10	.	2	.	.	+	.	0	x	x	x	+	+	.	.	.	.	.	+	x	.	.	.	0	.	0	+	.	.	.	.	.	1	0	0

Note

ID = Course Code

. = Yes

+ = No

x = No enough data to answer the question

APPENDIX D – TEN FILLED OUT ASSESSMENT QUESTIONNAIRES

Tables D-1 through D-10

Evaluation Result of Course No. 1 - 10

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

- Yes/No questions with the symbol **a** in front of the question.

0 = Yes, 1 = No

- Qualitative questions with the symbol **•** in front of the question

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code **01**

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	0	
b	•	Are they clear and comprehensive?	(0 - 4)	2	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	0	Achieved by: Content Rendering: text, audio-visual presentations Main Learning activities: readings, group discussions, online research, collaborative projects
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Facilitator/ Formal Authority/Expert

c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	Discussion period and due dates of assignments were given.
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	0	Novice and Mid level
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)	0	Achieved by: Group discussion and group project
b	a	Does the course assign roles to participants within group work?	(0 1)	0	Group leader rotations among group members
c	a	Does the course require peer evaluations to ensure the even and quality inputs among group members?	(0 1)	0	Achieved by: peer evaluation
6.		Individual Accountability			
a	a	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	0	Achieved by: article critiques, discussions, self-assessments, and peer evaluations
b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	0	Achieved by: required class discussions Weight in final grade: "10%"
7.		Interactive Instructional Materials			
a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Asynchronous Discussion, group work
b	a	Can the student interact with the material?	(0 1)	0	Self-assessment
8.		Supporting Resources			
a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	Gave instructions to get to the specific webpage. A book mark will minimize the steps and more direct. Module 11
b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World	(0 1)	0	

		Wide Web)			
c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	1	
9.		Appropriate Feedback			
a	a	Does the design encourage timely feedback from the instructor?	(0 1)	0	"Learning facilitator will respond in a timely manner to questions you have ...generally within one business day"
b	•	What type of feedback can the instructor provide? (Mixture of diferent types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	0	Narrative and comments

II. Content Presentation

1.		Appropriate Organization		Score	Comments
a	a	Is the course information structured?	(0 1)	0	Well-structured course
b	a	Is course information provided at appropriate places?	(0 1)	0	
2.		Visual Aspects			
a	a	Are there Help files to assist the user when in the course?	(0 1)	0	
b	•	Is the design of the user interface attractive?	(0 - 4)	4	
3.		Ease of Access			
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0 2	
c	a	Are segments designed to enhance speed of access (short pages, i.e.<= 3 PageDown)?	(0 1)	1	
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	0	
4.		Usage of Icons			
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	1	Utilized icons and colored objects

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	1	Students had to leave LearningSpace in order to view CD-ROM presentations
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on Notes Domino Server
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	1	The Internet, Hyperlinks; Presentation Software, PowerPoint & ScreenCam; The online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	2	
b	•	Is the course easy to navigate?	(0 - 4)	0	"steps to follow" for students to get around within the course

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

➤ Yes/No questions with the symbol a in front of the question.

0 = Yes, 1 = No

➤ **Qualitative questions with the symbol • in front of the question**

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code 02

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	0	
b	•	Are they clear and comprehensive?	(0 - 4)	2	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	0	Achieved by: Content Rendering: text, video clips Main Learning activities: readings, synchronous and asynchronous discussions, online research, problem-based assignments, case studies, collaborative projects
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Delegator/ Facilitator/Expert
c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	Discussion timing and due dates of assignments were given.
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	0	From novice to mid level to advanced level.
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)	0	Through collaborative projects
b	a	Does the course assign roles to participants within group work?	(0 1)	0	
c	a	Does the course require peer evaluations	(0 1)	1	

		to ensure the even and quality inputs among group members?			
6.		Individual Accountability			
a	a	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	0	Achieved by: research, case analyses collaborative project, self-assessments, and Personal Development Portfolio
b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	0	Achieved by: required course discussion Weight in final grade: No indication
7.		Interactive Instructional Materials			
a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Synchronou and Asynchronous Discussion, group projects
b	a	Can the student interact with the material?	(0 1)	0	self-assessment
8.		Supporting Resources			
a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	
b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	0	
c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	1	
9.		Appropriate Feedback			
a	a	Does the design encourage timely feedback from the instructor?	(0 1)	0	"You should contact the Instructor properly. The Instructor will respond within a 24 hour period."
b	•	What type of feedback can the instructor provide? (Mixture of diferent types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	0	Narrative and comments

II. Content Presentation

1. Appropriate Organization			Score	Comments	
a	a	Is the course information structured?	(0 1)	0	
b	a	Is course information provided at appropriate places?	(0 1)	0	
2. Visual Aspects					
a	a	Are there Help files to assist the user when in the course?	(0 1)	0	
b	•	Is the design of the user interface attractive?	(0 - 4)	2	
3. Ease of Access					
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0 2	0 from Notes client; 2 via the web
c	a	Are segments designed to enhance speed of access (short pages, i.e. <= 3 PageDown)?	(0 1)	0	Very good and consistent on this issue
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	0	
4. Usage of Icons					
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	1	Utilized icons and colored objects

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	Lotus Notes
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	0	
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on Notes Domino Server
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	0	Hyperlinks; Online synchronous conferencing: NetMeeting & Sametime; video/audio clips; The online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	2	
b	•	Is the course easy to navigate?	(0 - 4)	2	

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

➤ Yes/No questions with the symbol **a** in front of the question.

0 = Yes, 1 = No

➤ Qualitative questions with the symbol **•** in front of the question

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code 03

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	0	
b	•	Are they clear and comprehensive?	(0 - 4)	2	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	1	Achieved by: Content renderings: Text Main Learning activities: reading
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Expert/Formal Authority
c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	3	Novice
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)	1	
b	a	Does the course assign roles to participants within group work?	(0 1)	1	Delete
c	a	Does the course require peer evaluations to ensure the even and quality inputs among group members?	(0 1)	1	
6.		Individual Accountability			
a	a	Do the instructional materials require learners to engage themselves in analysis,	(0 1)	1	No analysis and synthesis aspects

		synthesis, and evaluation as part of their course and requirements?			
b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	1	
7.		Interactive Instructional Materials			
a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Asynchronous Discussion
b	a	Can the student interact with the material?	(0 1)	0	self-assessment
8.		Supporting Resources			
a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	
b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	1	
c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	1	
9.		Appropriate Feedback			
a	a	Does the design encourage timely feedback from the instructor?	(0 1)	1	
b	•	What type of feedback can the instructor provide? (Mixture of different types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	x	No sufficient data

II. Content Presentation

1.		Appropriate Organization		Score	Comments
a	a	Is the course information structured?	(0 1)	0	
b	a	Is course information provided at appropriate places?	(0 1)	0	Cross-criss, Interactive cross referencing
2.		Visual Aspects			
a	a	Are there Help files to assist the user when in the course?	(0 1)	1	
b	•	Is the design of the user interface attractive?	(0 - 4)	4	Text based
3.		Ease of Access			
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0	
c	a	Are segments designed to enhance speed of access (short pages, i.e.<= 3 PageDown)?	(0 1)	1	
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	0	
4.		Usage of Icons			
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	1	Used colors

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	0	
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on the Internet connections
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	2	Hyperlinks; The Internet, online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	0	
b	•	Is the course easy to navigate?	(0 - 4)	2	

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

- Yes/No questions with the symbol a in front of the question.

0 = Yes, 1 = No

- Qualitative questions with the symbol • in front of the question

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code 04

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	0	
b	•	Are they clear and comprehensive?	(0 - 4)	2	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	0	Achieved by: Content Rendering: text, audio-visual presentations Main Learning activities: readings, discussions, case analysis, collaborative projects
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Facilitator/ Formal Authority/Expert
c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	Discussion period and due dates of assignments were given.
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	3	Novice
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)	0	Achieved by: team/group assignments
b	a	Does the course assign roles to participants within group work?	(0 1)	1	
c	a	Does the course require peer evaluations to ensure the even and quality inputs among group members?	(0 1)	1	

6.		Individual Accountability			
a	a	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	0	Achieved by: case analyses, group assignments, discussions, self-assessments, and peer evaluations
b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	0	Achieved by: required class discussions Weight in final grade: "50 points out of 425" about 12%
7.		Interactive Instructional Materials			
a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Asynchronous Discussion, team assignments
b	a	Can the student interact with the material?	(0 1)	1	
8.		Supporting Resources			
a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	
b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	0	
c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	1	
9.		Appropriate Feedback			
a	a	Does the design encourage timely feedback from the instructor?	(0 1)	1	check
b	•	What type of feedback can the instructor provide? (Mixture of different types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	0	Narrative and comments

II. Content Presentation

1. Appropriate Organization				Score	Comments
a	a	Is the course information structured?	(0 1)	0	
b	a	Is course information provided at appropriate places?	(0 1)	0	
2. Visual Aspects					
a	a	Are there Help files to assist the user when in the course?	(0 1)	0	
b	•	Is the design of the user interface attractive?	(0 - 4)	4	
3. Ease of Access					
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0 2	
c	a	Are segments designed to enhance speed of access (short pages, i.e.<= 3 PageDown)?	(0 1)	1	
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	0	
4. Usage of Icons					
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	1	Utilized icons and colored objects

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	1	Students had to leave LearningSpace in order to view CD-ROM presentations
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on Notes Domino Server
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	2	Presentation software: ScreenCam, PowerPoint; The online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	2	
b	•	Is the course easy to navigate?	(0 - 4)	2	

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

➤ Yes/No questions with the symbol **a** in front of the question.

0 = Yes, 1 = No

➤ Qualitative questions with the symbol **•** in front of the question

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code 05

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	0	
b	•	Are they clear and comprehensive?	(0 - 4)	2	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	0	Achieved by: Content Rendering: text, video clips Main Learning activities: readings, discussions, online research, problem-based assignments
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Facilitator/ Personal Model/Expert
c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	Discussion period and due dates of assignments were given.
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	0	Novice and mid level
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)	1	
b	a	Does the course assign roles to participants within group work?	(0 1)	1	
c	a	Does the course require peer evaluations to ensure the even and quality inputs among group members?	(0 1)	1	

6.		Individual Accountability			
a	a	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	0	Achieved by: problem-based practices, discussions, self-assessments, and self set goals & evaluation methods by learners.
b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	0	Achieved by: required class discussions Weight in final grade: Not indicated
7.		Interactive Instructional Materials			
a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Asynchronous Discussion
b	a	Can the student interact with the material?	(0 1)	0	self-assessment
8.		Supporting Resources			
a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	
b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	0	
c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	1	
9.		Appropriate Feedback			
a	a	Does the design encourage timely feedback from the instructor?	(0 1)	0	"The instructor will respond to student inquiries in a timely manner and will have materials on-line so that students can progress in a timely manner"
b	•	What type of feedback can the instructor provide? (Mixture of diferent types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	0	Narrative and comments

II. Content Presentation

1. Appropriate Organization				Score	Comments
a	a	Is the course information structured?	(0 1)	0	
b	a	Is course information provided at appropriate places?	(0 1)	0	
2. Visual Aspects					
a	a	Are there Help files to assist the user when in the course?	(0 1)	0	
b	•	Is the design of the user interface attractive?	(0 - 4)	2	
3. Ease of Access					
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0 2	
c	a	Are segments designed to enhance speed of access (short pages, i.e.<= 3 PageDown)?	(0 1)	1	check Adobe
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	0	
4. Usage of Icons					
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	1	Utilized icons and colored objects

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	0	The design of this course fully used MediaCenter within LearningSpace. All the multimedia materials were stored in it and linked with each module entry. The video/audio presentation was synchronized with PowerPoint presentation. The trade-off was the down loading time of the files from MediaCenter.
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on Notes Domino Server
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	0	video/audio clips; presentation software: PowerPoint; hyperlinks; The online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	2	
b	•	Is the course easy to navigate?	(0 - 4)	0	Each module had an orientation instruction

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

- Yes/No questions with the symbol a in front of the question.

0 = Yes, 1 = No

➤ **Qualitative questions with the symbol • in front of the question**

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code 06

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	0	
b	•	Are they clear and comprehensive?	(0 - 4)	2	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	0	Achieved by: Content Rendering: text, audio-visual presentations Main Learning activities: readings, discussions, cases studies, collaborative projects
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Facilitator/ Formal Authority/Expert
c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	Discussion period and due dates of assignments were given.
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	0	Novice and advanced
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)	0	Achieved by: Student had choices to do the assignment alone or in group; and collaborative project

b	a	Does the course assign roles to participants within group work?	(0 1)	1	
c	a	Does the course require peer evaluations to ensure the even and quality inputs among group members?	(0 1)	0	Achieved by: peer evaluations
6.		Individual Accountability			
a	a	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	0	Achieved by: article critiques, case analyses, discussions, collaborative projects, and peer evaluations.
b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	0	Achieved by: required class discussions Weight in final grade: "100points out of 500", 20%
7.		Interactive Instructional Materials			
a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Asynchronous Discussion, team projects
b	a	Can the student interact with the material?	(0 1)	1	
8.		Supporting Resources			
a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	
b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	0	
c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	1	
9.		Appropriate Feedback			
a	a	Does the design encourage timely feedback from the instructor?	(0 1)	1	
b	•	What type of feedback can the instructor provide? (Mixture of diferent types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	x	No sufficient data

II. Content Presentation

1. Appropriate Organization			Score	Comments	
a	a	Is the course information structured?	(0 1)	1	Not well structured
b	a	Is course information provided at appropriate places?	(0 1)	0	
2. Visual Aspects					
a	a	Are there Help files to assist the user when in the course?	(0 1)	0	
b	•	Is the design of the user interface attractive?	(0 - 4)	4	
3. Ease of Access					
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0 2	
c	a	Are segments designed to enhance speed of access (short pages, i.e. <= 3 PageDown)?	(0 1)	1	
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	0	
4. Usage of Icons					
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	1	Applied colors

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	1	Students had to leave LearningSpace in order to view CD-ROM and to participate discussions in HyperNews
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on Notes Domino Server
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	1	Hyperlinks; Presentation software, PowerPoint; The online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	2	
b	•	Is the course easy to navigate?	(0 - 4)	4	

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

- Yes/No questions with the symbol a in front of the question.

0 = Yes, 1 = No

- Qualitative questions with the symbol • in front of the question

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code 07

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	1	
b	•	Are they clear and comprehensive?	(0 - 4)	4	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	0	Achieved by: Content Rendering: text Main Learning Activities: readomgs. visual field trips, synchronous and asynchronous discussions, problem-based assignments
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Facilitator/ Formal Authority/Expert
c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	Discussion period and due dates of assignments were given.
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	0	Novice and mid level
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)	1	
b	a	Does the course assign roles to participants within group work?	(0 1)	1	
c	a	Does the course require peer evaluations to ensure the even and quality inputs among group members?	(0 1)	1	

6.		Individual Accountability			
a	a	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	0	Achieved by: problem-based practices, discussions, and peer evaluations
b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	0	Achieved by: required class discussions Weight in final grade: Not indicated
7.		Interactive Instructional Materials			
a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Synchronous and Asynchronous Discussion
b	a	Can the student interact with the material?	(0 1)	1	
8.		Supporting Resources			
a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	
b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	0	Virtual galleries and museums around the world
c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	1	
9.		Appropriate Feedback			
a	a	Does the design encourage timely feedback from the instructor?	(0 1)	1	
b	•	What type of feedback can the instructor provide? (Mixture of diferent types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	0	Narrative and comments

II. Content Presentation

1. Appropriate Organization			Score	Comments	
a	a	Is the course information structured?	(0 1)	0	
b	a	Is course information provided at appropriate places?	(0 1)	0	
2. Visual Aspects					
a	a	Are there Help files to assist the user when in the course?	(0 1)	1	
b	•	Is the design of the user interface attractive?	(0 - 4)	2	
3. Ease of Access					
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0	
c	a	Are segments designed to enhance speed of access (short pages, i.e.<= 3 PageDown)?	(0 1)	1	
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	1	Digitizing Pad & Painter software over \$200
4. Usage of Icons					
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	1	Utilized icons and colored objects

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	0	
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on the Internet connections
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	1	Hyperlinks; Online synchronous conferencing, ERIC; The online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	3	
b	•	Is the course easy to navigate?	(0 - 4)	2	

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

➤ Yes/No questions with the symbol **a** in front of the question.

0 = Yes, 1 = No

➤ Qualitative questions with the symbol **•** in front of the question

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code 08

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	0	
b	•	Are they clear and comprehensive?	(0 - 4)	2	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	0	Achieved by: Content Rendering: text, Main Learning Activities: readings, discussions, practice-learning sign language from an animated computer program.
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Formal Authority/Expert
c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	Due dates were given to assignments.
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	0	Novice and mid level
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)	1	
b	a	Does the course assign roles to participants within group work?	(0 1)	1	
c	a	Does the course require peer evaluations to ensure the even and quality inputs among group members?	(0 1)	1	

6.		Individual Accountability			
a	a	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	1	No evaluation aspect
b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	0	Achieved by: required class discussions Weight in final grade: "50 points out of 250 points", 20%
7.		Interactive Instructional Materials			
a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Asynchronous Discussion
b	a	Can the student interact with the material?	(0 1)	0	Interactive Sign Language software
8.		Supporting Resources			
a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	
b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	1	
c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	1	
9.		Appropriate Feedback			
a	a	Does the design encourage timely feedback from the instructor?	(0 1)	1	
b	•	What type of feedback can the instructor provide? (Mixture of diferent types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	0	Narrative and comments

II. Content Presentation

1. Appropriate Organization				Score	Comments
a	a	Is the course information structured?	(0 1)	1	
b	a	Is course information provided at appropriate places?	(0 1)	0	
2. Visual Aspects					
a	a	Are there Help files to assist the user when in the course?	(0 1)	0	
b	•	Is the design of the user interface attractive?	(0 - 4)	2	
3. Ease of Access					
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0 2	
c	a	Are segments designed to enhance speed of access (short pages, i.e.<= 3 PageDown)?	(0 1)	1	
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	0	
4. Usage of Icons					
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	1	Utilized icons and colored objects

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	0	
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on Notes Domino Server
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	1	Hyperlinks; Animation software; The online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	2	
b	•	Is the course easy to navigate?	(0 - 4)	2	

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

- Yes/No questions with the symbol a in front of the question.

0 = Yes, 1 = No

- Qualitative questions with the symbol • in front of the question

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code 09

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	0	
b	•	Are they clear and comprehensive?	(0 - 4)	2	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	0	Achieved by: Content Rendering: text, audio-visual presentations Main Learning Activities: readings, discussions, research, case studies, collaborative project-simulation game
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Facilitator/ Formal Authority/Expert
c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	Discussion period and due dates of assignments were given.
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	0	Novice, mid level, and advanced.
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)	0	Achieved by: collaborative project - a Web-based simulation game
b	a	Does the course assign roles to participants within group work?	(0 1)	0	
c	a	Does the course require peer evaluations to ensure the even and quality inputs	(0 1)	0	Achieved by: peer evaluations

		among group members?			
6.		Individual Accountability			
a	a	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	0	Through case analyses , discussions, collaborative projects, and peer evaluations
b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	0	Achieved by: required class discussions Weight in final grade: "20%"
7.		Interactive Instructional Materials			
a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Asynchronous Discussion, team projects
b	a	Can the student interact with the material?	(0 1)	0	Web-based simulation project
8.		Supporting Resources			
a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	
b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	0	
c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	1	
9.		Appropriate Feedback			
a	a	Does the design encourage timely feedback from the instructor?	(0 1)	1	
b	•	What type of feedback can the instructor provide? (Mixture of diferent types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	0	Narrative and comments

II. Content Presentation

1.		Appropriate Organization		Score	Comments
a	a	Is the course information structured?	(0 1)	0	
b	a	Is course information provided at appropriate places?	(0 1)	0	
2.		Visual Aspects			
a	a	Are there Help files to assist the user when in the course?	(0 1)	0	
b	•	Is the design of the user interface attractive?	(0 - 4)	2	
3.		Ease of Access			
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0 2	
c	a	Are segments designed to enhance speed of access (short pages, i.e.<= 3 PageDown)?	(0 1)	1	
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	1	\$39 for web registration fee
4.		Usage of Icons			
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	1	Utilized icons and colored objects

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	1	Students had to leave LearningSpace in order to view CD-ROM presentations
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on Notes Domino Server
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	0	Hyperlinks; Presentation software: screencam; Web-based simulation; The online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	2	
b	•	Is the course easy to navigate?	(0 - 4)	2	

Attributes to instructional design via Internet/Web

- Questionnaire -

Type of Questions

Questions under each attribute are classified into two categories:

➤ Yes/No questions with the symbol **a** in front of the question.

0 = Yes, 1 = No

➤ Qualitative questions with the symbol **•** in front of the question

Each qualitative question can be labeled on a scale from 0 through 4 max., in some cases indicating decreasing degrees of congruence with the respective attribute, in some cases indicating different characterizations.

For example:

Are they (i.e. instructional objectives) clear and comprehensive?

Scale range: 0 = Excellent, 2 = average/fair/no specifics, 4 = Not clear and not comprehensive.

Code 10

I. Facilitation of Online Learning

1.		Instructional Objectives and Learning Outcomes		Score	Comments
a	a	Are learning objectives stated?	(0 1)	0	
b	•	Are they clear and comprehensive?	(0 - 4)	2	
2.		Adaptability			
a	a	Does the course accommodate different learning styles?	(0 1)	0	Achieved by: Content Rendering: text, video & audio clips Main Learning Activities: readings, discussions, online research
b	a	Does the course accommodate different teaching styles?	(0 1)	0	Facilitator/ Formal Authority/Expert
c	a	Is the course designed to accommodate different competency levels based upon users' previous experience?	(0 1)	1	
3.		Audience Consideration			
a	a	Does the course give timing flexibility to students in learning course materials and accomplishing learning activities?	(0 1)	0	
4.		Online Learning Activities			
a	•	What level of online learning activities does the course material promote? (Mixture of different levels = 0; Advanced = 1 e.g. collaborative projects; Mid level = 2 e.g. keypals, e-mail experts/mentor, web quest; Novice = 3 e.g. reference, virtual field trip, research, cyberguide; None = 4)	(0 1 2 3 4)	0	Novice and mid level
5.		Positive Interdependence			
a	a	Does the course encourage group work?	(0 1)		Did not have sufficient data to analyze on this issue -- "About TFT"
b	a	Does the course assign roles to participants within group work?	(0 1)		Did not have sufficient data to analyze on this issue -- "About TFT"
c	a	Does the course require peer evaluations to ensure the even and quality inputs among group members?	(0 1)		Did not have sufficient data to analyze on this issue -- "About TFT"

6.		Individual Accountability				
	a	a	Do the instructional materials require learners to engage themselves in analysis, synthesis, and evaluation as part of their course and requirements?	(0 1)	1	Not required
	b	a	Do the instructional materials require individual participant to help and learn from each other?	(0 1)	1	Not required
7.		Interactive Instructional Materials				
	a	a	Do the instructional materials promote interaction among students and instructors?	(0 1)	0	Asynchronous Discussion
	b	a	Can the student interact with the material?	(0 1)	0	
8.		Supporting Resources				
	a	a	Can the instructor "link" to appropriate materials, examples or simulations?	(0 1)	0	
	b	a	Can students access appropriate library resources? (this may include a "virtual library" accessible through the World Wide Web)	(0 1)	0	
	c	a	Can the course support interaction with "experts" or guest lecturers?	(0 1)	0	Integrate an "Ask an expert" component
9.		Appropriate Feedback				
	a	a	Does the design encourage timely feedback from the instructor?	(0 1)	1	
	b	•	What type of feedback can the instructor provide? (Mixture of diferent types = 0; Narrative = 1; Comments = 2; A score or grade of (A,B, C) = 3; None = 4)	(0 1 2 3 4)	x	Did not have sufficient data to analyze on this issue

II. Content Presentation

1.		Appropriate Organization		Score	Comments
a	a	Is the course information structured?	(0 1)	0	
b	a	Is course information provided at appropriate places?	(0 1)	0	
2.		Visual Aspects			
a	a	Are there Help files to assist the user when in the course?	(0 1)	0	
b	•	Is the design of the user interface attractive?	(0 - 4)	0	Excellent example
3.		Ease of Access			
a	a	Is the course accessible anytime anyplace in general?	(0 1)	0	
b	•	Does the page load quickly on an average basis? (0 = 1-5 seconds? - 1 = 6-10 seconds - 2 = 12-30 seconds? 3 = 31-60 seconds? - 4 = over a minute)	(0 1 2 4)	0	
c	a	Are segments designed to enhance speed of access (short pages, i.e. <= 3 PageDown)?	(0 1)	1	
d	a	Does a student have to purchase specific hardware or software other than a computer with internet connection to use the course ?	(0 1)	0	Students do not even need paper and pen because its build-in Digital portfolio and online notes taking function
4.		Usage of Icons			
a	a	Is there any explanation of the specific definitions of icons/colors used in the course?	(0 1)	0	Included an explanation of color usage in the Help File.

III. Application of Information and Communication Technology

1.		Delivery Platform		Score	Comments
a	a	Can the delivery platform support various types of media?	(0 1)	0	"use primarily html and Java script"
b	a	Can the student participate in learning activities without leaving the delivery platform?	(0 1)	0	Good design on this issue. Student can take notes, open audio/video clips, websites, within the delivery platform
c	•	Is the delivery platform stable?	(0 - 4)	0	Depends on the Internet connections
2.		Maximize Use of Technology			
a	a	Does the course integrate proper technology to facilitate learning in the online environment?	(0 1)	0	
b	•	How many different types of technologies or media (e.g. Animation, video/audio conferencing, presentation software, the Internet, etc) have been used in the course? (0 = Four or above four; 1 = Three; 2 = Two; 3 = One; 4 = None).	(0 1 2 3 4)	1	Hyperlinks; Presentation software: audio/video clips; The online asynchronous discussion tool
3.		Accessibility to All Elements to Achieve the Objective			
a	•	How intuitive is navigation within the delivery platform to new users?	(0 - 4)	0	
b	•	Is the course easy to navigate?	(0 - 4)	0	Help files to direct the user how to move within the course.