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To the Graduate Council:

I am submitting herewith a dissertation written by Eunjoo Oh entitled "Current Practices in Blended Instruction." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

Russell French, Major Professor

We have read this dissertation and recommend its acceptance:

Ed Counts, Michael Waugh, Doohun Lim

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Accepted for the Council:

Anne Mayhew

Vice Chancellor and Dean of
Graduate Studies

Original signatures are on file with official student records.

Current Practices in Blended Instruction

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Eunjoo Oh
May 2006

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DEDICATION

This dissertation is dedicated to my family, Minjae Kim, Injae Kim, and Yongseong Kim for always encouraging and supporting me to keep up with my work in order to achieve my goals.

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Abstract

Blended instruction usually describes a combination of learning environments in which major components of the instruction are delivered online with the remainder being face-to-face instruction (Marsh & Mcfadden, 2004; Rossett et al., 2004). Recently, blended instructional methods have been introduced as a means of employing the best strategies of both online and classroom instruction and one of the best solutions for the shortcomings of online learning environments by including human involvement.

The purpose of this study was to investigate current practices in blended instruction. In particular, the study sought to examine the predominant characteristics and potential variations of blended instruction in the extensive doctoral research universities as classified by the Carnegie Foundation. Surveys were conducted with a sample of faculty and IHE representatives from the 151 extensive research universities. The survey data included 34 staff responses from 33 different universities and 133 faculty responses from 30 different universities out of the total 151 universities.

In this study, blended instruction was defined as an instructional delivery method in which any portion of online instruction is replaced by classroom instruction. The study examined instructional activities that might or might not be consistent with this definition or challenges encountered by the users as well as advantages of blended instruction perceived by the users. The study also identified institutional support, and faculty users' attitudes toward and perceptions of blended instruction.

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CHAPTER I

INTRODUCTION AND GENERAL INFORMATION

Background

Distance education is defined as any formal instructional approach in which the majority of instruction occurs when teachers and learners are separated in space and/or time (Grimes, 1993; Jonassen, 1992; Perraton, 1998; Sherry, 1996). The words “distance education” and “distance learning” are often synonymously used in many different discipline areas in higher education institutions (Perraton, 1998; Sherry, 1996). For nearly a century, distance education has been proposed as an excellent educational solution for students who are not physically able to attend school (Henichi, Modelnda, Russel, and Smaldino, 2002) and the capacity of distance education has been expanded tremendously as society has changed and the population suitable for distance education has increased.

Over the years, a wide variety of instructional media have been used for distance education, and the delivery media for distance education have gradually become more capable and improved these distance learning environments. According to Morabito (1999), the growth of distance education is categorized into four generations as follows: (a) printed instruction; (b) early technology (e.g. broadcasting systems); (c) online instruction; and (d) web-based teleconferencing. In each generation, different instructional delivery media have been applied to distance learning environments, and distance education has been defined in various ways based on the primary instructional delivery medium and characteristics of instructional environments.

The early definition of distance education was correspondence education in which instruction took place by the exchange of printed materials. When broadcasting systems such as radio and television became a common means of delivering instruction to distance learners, “open education” became a term used to describe distance education. With the emergence of computer technology, network systems, and digital communication tools, distance education has come to mean online or computer-mediated learning. These computer-mediated online learning systems provide people with pre-designed instruction (Hawkridge, 2002, p.271).

As information technology has advanced, the instructional media used for distance education have evolved and new definitions for distance education have arisen based on the combination of instructional characteristics (e.g. instructional delivery media, types of services, means of student- teacher interaction, instructional methods) that students would experience during instruction. While most previous definitions of distance education have focused on the instructional medium being used, recent definitions tend to be more specific, focusing on the accessibility, functionality, and utility of the learning systems that connect the teacher and learner.

Various Definitions of Distance Education

Moore and Kearsley (1996) describe distance education as planned learning that uses special techniques and methods in order to design and deliver instruction. The California Distance Learning Group (2005) defines it as a process of connecting learners and educational resources so that learning happens at a distance. The United States Distance Learning Association (USDLA) (2005) explains distance education (DE) as a

way to acquire knowledge and skills through mediated information and instruction that is transferred by any type of technologies or learning media at a distance. This definition complements Hawkrige's definition (2002). Keegan (1986) describes distance education as "noncontiguous communication between learner and teacher mediated by print or some form of technology." The Instructional Telecommunications Council (ITC) (2005) emphasizes the sharing of resources and opportunities for collaboration among students and between students and instructors created by using various types of communication tools in online environments. The Association for Educational Communications and Technology (AECT) (2005) defines distance education as the applications and devices that facilitate teaching and learning practices while students and instructor are away from each other. In business-oriented organizations, the concepts and applications such as just-in-time training, need-based learning, performance technology, knowledge management systems, and expert systems are associated with instructional practices in distance education (Bielawski and Metcalf, 2003, p. 88).

In spite of the differences in terminology regarding distance education, Keegan (1986) claims that several common characteristics are often found in distance education: (a) the [physical] separation of students and instructor during the instruction; (b) the influence of an educational organization; (c) the use of one or more instructional delivery media; (d) the provision of two-way communication between students and instructor; (e) the separation of the learner from the learning group; and (f) individualized instruction that allows each student to have some control over his/her progress in learning. Recently, many other new forms of technology-mediated communication have been incorporated

into distance learning environments, and these tools have tended to alter some of the old concepts related to one-way communication and separation by bridging the communication gaps between/among learners and instructors. In particular, information and communication technology such as cable, satellite television, computers, and digital network systems provides a means of synchronous instruction with audio-visual materials in a two-way communication mode.

Instructional Delivery Methods Used in Distance Education

The earliest form of distance education consisted of using printed materials delivered by mail (Morabito, 1999; Sherry, 1996). In this early form of distance learning, a gap was often found in teaching and learning since the delivery medium usually was limited to one-way communication. The delivery system lacked timely interactions between/among teachers and learners, and was often not efficient, requiring a significant length of time for learners and instructors to communicate with each other.

The advancement of communication technology has gradually improved distance education environments, making synchronized instruction possible. In the 1900s, instructional media based on telecommunication systems (e.g. television, radio, telephone, video tapes, fax, television, voice mail) were used for delivering instruction (Heinich et al., 2004,p.291; Morabito, 1999). A large portion of the instruction was based on one-way communication in which a teacher delivered instruction, and learners merely received information. Two-way communication methods such as an audio teleconference that connects people using the telephone and audio-graphic teleconference that adds still-picture transmission to audio conference using telephone, slow-scan analog video, and

fax were introduced. However, these instructional methods were costly and inefficient in many ways since it took a large amount of time to transmit visual information, and the tools were not readily available for students to use (Heinich et al., 2002, p.291).

Recently, online instruction based on computer-based technologies (e.g. Internet, World –Wide Web) has opened a new era in distance education (Heinich et al., 2002, p.297) and has begun to play a major role in the delivery of instruction to distant learners. Online instruction refers to “any form of learning/teaching that takes place via computer network” (Kearsley, 1997). It is based on digitally transmitted communications and World-Wide Web-based learning resources. Online instruction provides students and teachers with more advanced learning and teaching tools and environments such as two-way written communication opportunities and access to stored information resources (Heinich, 2002, p. 301).

Online instruction, which is one form of distance education, has contributed to the expansion of the educational sphere by reaching people in various locations; this instructional mode has changed the relationships among instruction, time, and space (physical location on earth), thereby allowing students increased access to education. Over the years, different instructional design practices, communication tools, and learning systems have been developed and integrated into online learning environments. The communication tools available in online learning environments have been incorporated into courses, and they have provided solutions to the problems that were presented in earlier formats of distance education (e.g. inefficiency use of time, a low level of the human involvement in the learning process, a lack of a sense of belonging).

In 2005, real-time learning and virtual learning environments are being introduced by universities. In these learning environments, instruction takes place in a synchronous manner, and students act as if they were in a real classroom (Abramson et al., 2004; Jones, 2004). For example, according to Jones (2004), University of North Texas has adopted a 3-D virtual learning environment for selected courses. In the 3-D virtual learning environment, a building including classrooms and other facilities has been built using triangles or polygons. According to Johns, users feel as though they are walking the halls of a building as they move the keyboard or mouse and sit in the classroom.

Every year an increasing number of students choose online instruction and computer technology as a learning medium. According to a report by the US Department of Commerce on computer and Internet use (2001), individuals have been continuously expanding their uses of computers and the Internet. In 2001, 65.6 percent of the US population were computer users and 53.9 percent used the Internet, while 53.5 percent and 22.2 percent were users of computers and the Internet in 1997. According to Dunn (2001), hundreds of university degrees are now available online; about 90,000 university-level courses are available online, and approximately two-thirds of higher education institutions offer at least some courses online.

The development of online instruction improves instructional environments in both education systems and business organizations. Online instruction expands options and possibilities in student learning by providing courses, resources, and performance support systems synchronously or asynchronously. In synchronous instruction,

interaction between instructor and learners occurs simultaneously and in asynchronous instruction, interactions do not occur simultaneously among individuals.

In spite of many advanced features of the online instructional mode, issues such as low levels of interaction, lack of varied instructional strategies, and poor instructional design are often cited as shortcomings when discussing the effectiveness of online instruction. Responding to these issues, many studies such as Oh, Lim and French, (2004) and Oh and Albright (2004) have discussed the advantages and disadvantages of the online instructional mode. Having acknowledged the disadvantages, advocates of online instruction have made efforts to overcome them in many ways.

Some have claimed that online instruction restricts active student engagement in learning events unless the student is a self-motivated, active learner. Rovai (2003) claims that online instruction is often found to be “impersonal, superficial, misdirected, and potentially dehumanizing and depressing”, inhibiting the pedagogical values of instruction. In addition, other studies (Daniels and Moore, 2000; Ford and Chen, 2000) expressed that online learning environments require students to be strongly motivated and self-directed, and possess strong organizational skills in their learning habits since working in online learning environments is an isolating and independent job.

Considering the fact that sharing feelings, experiences, knowledge, and a sense of belonging (Valejs, 2003) is important in the learning process, online learning environments prevent both learners and instructors from experiencing those sharing opportunities in dynamic communication environments. Therefore, strategies have been

suggested to improve online learning environments, and various instructional practices (e.g. blended instruction, hybrid instruction) have been attempted.

Blended Instruction

According to Murphy (2002,2003), recently, blended instruction integrating online and onsite instruction has been recommended as one of the best instructional approaches for use in higher education institutions since it may address the negative aspects of the distance learning environment by including human involvement.

According to Marsh, McFaden and Price (2004), blended instruction allows more options for students and instructors. Instructors can better manage the class by sharing ideas and activities with students. Students can organize their learning better with an instructor's direct guidance, immediate feedback, and direct communication with peers in class, while enjoying self-directed individualized learning environments, reflective discussions, and virtual collaborations in online instruction. Educators expect positive outcomes since pedagogical and methodological concerns about online instruction are addressed in this mode. However, the concept of blended instruction is new, and various definitions of and practices in blended instruction are possible.

The Relationships Between Blended Instruction and Online Instruction

According to studies by Marsh et al., (2004) and Rossett et al., (2003), blended instruction usually describes a combination of learning environments in which major components of the instruction are delivered online with the remainder being face-to-face instruction.

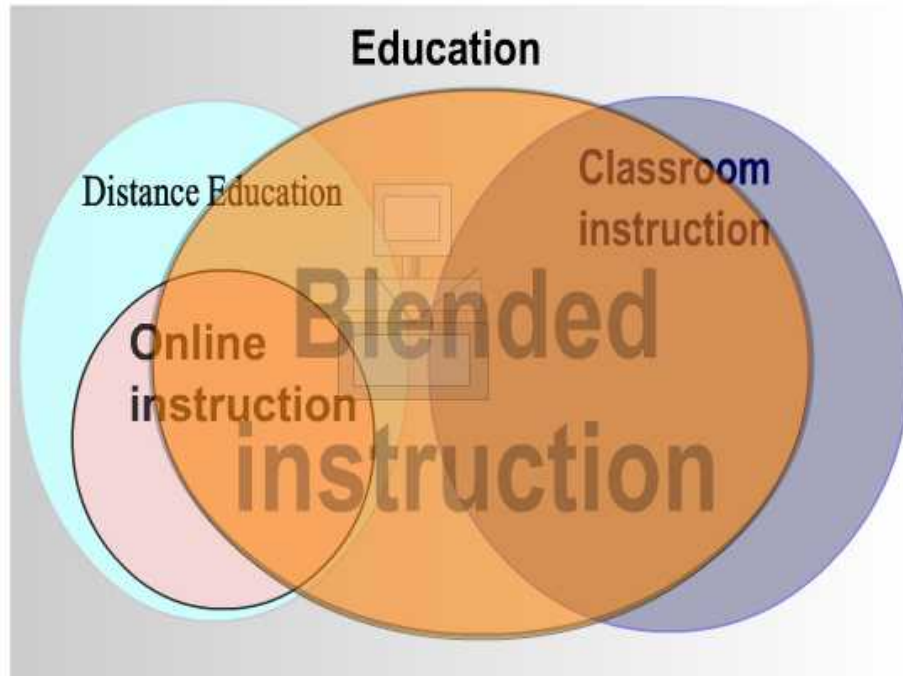


Figure 1. Interrelationships Among Instructional Delivery Modes

Blended instruction includes both online and classroom instructional components, yet it is considered a format for online instruction. Blended instruction should be understood in relation to online instruction, classroom instruction, and interrelationships among these instructional modes. *Figure 1* is a diagram depicting these interrelationships.

Blended instruction as defined by scholars such as Khine and Lourdusamy (2003), Marsh et al., (2004), and Rossett et al., (2003), can be portrayed as *Figure 1* suggests. In this format, online instruction usually consists of well-organized learning modules with activities, project-based assessments, and virtual discussions, while classroom events are designed in either a formal or an informal way with topics that can be better handled in a classroom setting. However, as previously mentioned, blended instruction has been

interpreted and practiced differently in different instructional settings, and it is unclear how many higher education institutions are defining this concept and using it in this way.

In some cases, blended instruction is composed of more than 50% classroom instruction with less than 50% online instruction (RIT model), while in other cases, blended instruction is composed of more than 50% online instruction with the remainder being classroom instruction (San Diego State University; University of California, Los Angeles, etc). Yet, regardless of the portion of online and classroom instruction, an instructional practice in blended instruction is “combining online instructional delivery systems with classroom instruction (Osguthorpe and Graham, 2003). Thus, as previously mentioned, blended instruction has been recommended as one of the best solutions for the shortcomings of online learning environments because it includes human, face-to-face interaction. In particular, blended instruction solves problems such as a lack of human interaction and “procrastination tendency” in asynchronous online instruction. Thus, it can be “a promising approach to maximizing the merits of different delivery media” (Yoon and Lim, 2005).

The concept of blended instruction as related to online instruction and distance education is new, and there is not yet sufficient information regarding current practices in blended instruction. Therefore, it is necessary to examine many manifestations of the blended concept in practice to determine its predominant characteristics and potential variations.

Problem to Be Addressed

Online instruction has served as a means of education and training in many fields, as has face-to-face instruction. Yet there have been concerns about the limitations of online learning environments. Many online instructional methods have been suggested and practiced, and recently, blended instructional methods have been introduced as a means of employing the best strategies of both instructional approaches. However, studies focusing on blended instruction are scarce, and definitions of and current trends in the delivery of blended instruction are not fully acknowledged.

Purposes of the Study

The purpose of this study was to investigate definitions of and current practices in blended instruction in higher education institutions, particularly focusing on predominant characteristics and possible variations of blended instruction.

Design of the Study

Research Questions

Three research questions were proposed to investigate the definitions of blended instruction and issues related to blended instruction as follows;

(1) How do faculty and institutional representatives define blended instruction?

(2) How is blended instruction currently being practiced?

(a) What types of instructional delivery methods, technologies, instructional components, and assessment methods are currently being used?

- (b) Why, how, and to what extent do faculty blend instruction and to what extent is blended instruction being used in higher education institutions?
 - (c) Are instructional practices different based on institutions, disciplines, and characteristics of instructors such as age, gender, experience, and position?
- (3) In what ways are faculty involved in blended instruction?
- (a) Are faculty involved in developing, designing, and maintaining online instructional components?
 - (b) What are faculty attitudes toward and perceptions of blended instruction?
 - (c) How do institutions support faculty involved in blended instruction?

Population

The target population of this study was IHE (Institutes of Higher Education) coordinators or others who are responsible for online instruction and/or assistance to faculty (Group A), and faculty members who are actively involved in blended instruction in higher education institutions (GroupB).

Sample

As a sample population, staff and faculty members from the universities that are classified as extensive doctoral universities by the Carnegie Classification of Institutions of Higher Education were selected. The extensive doctoral research universities were taken as a sample population for this study since those universities are perceived to be pioneers in the research and practices of distance learning.

Methodology

Design and Pilot of Instruments

The study was composed of two phases; (a) pilot study and (b) data collection. The purposes of the pilot survey study were to determine whether (a) the survey instruments were reliable; (2) the survey questions were appropriately worded and arranged; and (3) the information obtained from the surveys could be analyzed. The second phase of study was designed to collect data necessary for this study using the surveys piloted in phase I and revised thereafter.

Pilot of Instruments

Two survey questionnaires (Survey A and Survey B) were developed by the investigator by synthesizing information from various resources. The questionnaires were designed to collect information regarding the issues related to blended instruction from two different samples of respondents: Survey A was designed to collect data from IHE representatives and survey B was designed to collect data from faculty in higher education institutions.

While there have been several different definitions of blended instruction, the definition used for the purposes of this study was “Blended instruction is defined as an instructional delivery method in which any portion of online instruction is replaced by classroom instruction”. The survey was designed to examine practices that may or may not be consistent with this definition, challenges encountered by users of blended instructional approaches, and advantages perceived by them. The surveys also examined institutional support, and faculty users’ attitudes and perceptions.

The purpose of the pilot study was to confirm two types of reliability; internal consistency and equivalence of the online survey test instruments. In order to test the reliability, the developed online surveys were administered to 180 University of Tennessee faculty and 4 staff in the Innovative Technology Center (ITC) at the University of Tennessee during the period of April – May 2005. The equivalence test was used to measure the compatibility of the same instrument in two equivalent or parallel forms and the internal consistency test was used to measure the homogeneity of the items of the survey instruments (McMillian and Schumacher, 1997, p. 241).

The responses to each section of the questionnaires were entered into SPSS, and Cronbach's alpha test was employed to generate the levels of reliability. In order to determine the levels of equivalence of the online survey approach, the same survey questionnaires were administered in both paper and online formats to 10 participants (five (5) instructors, one (1) assistant professor, and four (4) ITC staff) from the total pilot population. The responses to both formats of questionnaires were compared to determine if the responses to the same questions match each other. If more than 50% of the participants responded to each survey differently for more than 50% of the questions, the survey questions were modified accordingly.

In addition, the results of the pilot study were used to determine (a) if the questions provided the required information, (b) whether the information could be analyzed, and (c) if the online survey format was a reliable option for data collection. The comments from the participants were informally collected to improve the survey

instruments as well. According to the outcomes of the pilot study, the survey instruments were revised to be used for data collection in the principal study.

Data Collection

Survey instruments were revised according to the results of the pilot study and uploaded on the Web for data collection along with the informed consent forms. For group A, a list of organizations that are designed to assist faculty in developing online courses was obtained from the websites of the 151 extensive doctoral universities. After investigating each organization's website, a list of the IHE representatives who are responsible for the organizations or whose job is assisting faculty in developing online courses was created. Email messages describing the purposes and procedures of the study were sent out to the 151 IHE representatives to ask their participation in the study. Five (5) reminder messages were sent at 7 day intervals and the data were collected during May 2005 and June 2005.

For group B, a list of the 151 extensive doctoral universities was obtained from the Carnegie Foundations' website. Of the 151 universities, 20 participating universities were randomly chosen using random number method in Excel. After investigating the websites of the 20 universities, the investigator selected 2 participating departments from each university based on the information available regarding the levels of engagement in online instruction. After selecting the 40 participating departments, an email message asking permission to conduct a survey with their faculty members was sent to the department heads or deans of the colleges. Five reminder messages were sent to persons who did not respond. Five of those messages were sent at 7 day intervals. If permission

was not given or there was not any response to the email message, another department or university within the target population was selected and contacted. The selection procedures were repeated until permission from at least 2 departments in each university was obtained.

After obtaining permission from participating universities, the same email message that was used for the pilot study was sent to faculty members to request their participation in this study. If fewer than 3 faculty from each department agreed to participate in the survey, another department was selected and contacted immediately. The faculty selection process was repeated until the criteria were met. Participation in the study was strictly voluntary. Any university or faculty member who initially agreed to participate could withdraw at any time. All faculty members in the selected departments were invited to participate in the study.

Analysis of Data

Responses to the survey questions were analyzed using the content analysis method and descriptive statistics and presented in frequency tables and figures. SPSS and Text Analysis software were used to analyze open-end questions and multiple choice questions; the responses to the open-end were entered into Text Analysis software and analyzed with a content analysis method to identify patterns in responses. Responses from the multiple choice questions were entered into SPSS, and the results were summarized descriptively in tables. In addition, inferential statistics (e.g. Independent Sample T-test, Chi-square test, Phi and Lambda coefficients tests) were used to compare

the data by variables such as gender, institutional type, and participants' teaching experience.

Assumptions

Several assumptions were made in conducting this study.

1. The survey instruments were valid and reliable.
2. Participants provided honest responses to survey questions.
3. Faculty participants were representative of the faculties of the extensive doctoral research universities selected for this study.
4. There was not any bias or prejudice introduced into this study by the investigator.

Limitations

Limitations of the study included the following;

1. Group A participants were limited to the 151 extensive doctoral research institutions classified by the Carnegie Foundation who agreed to participate.
2. The faculty sample for group B represented only departments in each of 20 selected schools within the larger population of 151 extensive doctoral research universities who agreed to participate.
3. Only information available on university and faculty websites was used to select departments for participation.

4. Findings of the study can only be generalized to the 151 extensive doctoral research institutions (Group A), the 40 departments selected from within them (Group B), and the faculty members who participated in the study.
5. Reluctance to open an email message from an unknown user could have led to problems in obtaining an adequate sample.

Delimitations

1. Only the 151 extensive doctoral research universities identified by the Carnegie Foundation were selected for study.
2. Participants were limited to those who were selected by the investigator and who were willing to participate in the study.

Definitions of Terms

The definitions of terms below are synthesized and modified from a variety of sources. These will be the definitions used in the investigation.

Asynchronous communication refers to a mode of communication in which interaction does not occur simultaneously among individuals.

Audio conferencing refers to a communication method in which individuals interact with each other through online communication tools or telephone lines simultaneously.

Authoring tool: Software application that is designed to develop online or multimedia-based learning content to deliver courses online.

Blended learning: Learning environment adopting both aspects of online and face-to-face instruction, a combination of varied delivery media, and a mix of technologies such as e-learning, electronic performance support, and knowledge management practices.

Computer based instruction: Learning environment in which a computer provides instruction and instructional materials and assists the learning process.

Courseware: Software that is specifically designed for use in a classroom or other educational setting, containing instructional materials.

Distance education refers to any formal instructional approach in which the majority of instruction occurs when teachers and learners are separated in space and/or time (Grimes, 1993; Sherry, 1996; Perraton, 1998, Jonassen, 1992)

e-Learning refers to online learning. However, it has broader categories and the term is often used in a business setting while online instruction is used in an education setting. The difference between those two modes is that e-Learning includes a variety of technologies such as intranet/extranet, database- learning system, KM (knowledge management), and EPSS (electronic performance support system) while online learning includes Web-based delivery.

EPSS refers to Electronic Performance Support System, electronic infrastructure that captures, stores, and distributes individual and corporate knowledge assets throughout an organization. The systems enable individuals to achieve required levels of performance in the fastest possible time and a minimum of support from other people.

KM refers to Knowledge Management data systems that store knowledge and information so that individuals may make use of it when necessary.

Learning module refers to a stand-alone instructional unit that is designed to satisfy one or more learning objectives. A module consists of one or more lessons with activities and assessment.

Online instruction refers to “any form of learning/teaching that takes place via computer network” (Kearsley, 1997).

Online learning refers to “learning by Web-based or Internet-based technologies” (Learning Circuits).

Server refers to a computer with a transferring function on a network, generally receiving and connecting incoming information traffic.

Synchronous communication refers to a mode of communication in which interaction occurs simultaneously among individuals.

Teleconference refers to using public telephone lines for communications links among various locations.

Video conferencing refers to a communication method that allow individuals to communicate with each other using both audio and video features.

Virtual classroom refers to classroom environments where learning materials, activities and assessment tools are made available to learners so that they can work through them at their own pace.

Organization of the Study

The study is composed of five chapters:

Chapter I contained an introduction to and overview of the study.

Chapter II consists of review of current literature focusing on the issues related to online instruction, particularly online instructional design and delivery issues using case studies from education and business organizations. The review also identifies different instructional delivery formats used online and their effectiveness in teaching and learning.

Chapter III describes in detail, the design of the study and the methodologies used in collecting and analyzing data. Statistical and content analysis procedures are described in detail with graphs and tables for each research question.

Chapter IV presents the findings of the study. The findings from the data analysis are discussed extensively in relation to the research questions which form the foundation of the study.

Chapter V provides a summary of the findings, conclusions, implications, and recommendations for further research.

CHAPTER II

REVIEW OF THE LITERATURE

Definitions of Blended Instruction

Rovai and Jordan (2004) define blended instruction as “a hybrid of classroom and online learning that includes some of the conveniences of online courses without the complete loss of face-to-face contact.” Colis and Moonen (2001) define blended instruction as a condition in which online instruction is incorporated with classroom instruction. In this learning mode, robust instructional components from the two instructional formats complement each learning environment. Online instructional components naturally become a part of classroom instruction in that students can enjoy classroom interaction, flexibility and convenience while taking fully online courses.

Taking the same approach, Singh and Reed (2001) define blended instruction as “a learning program in that more than one delivery mode is being used with the objective of optimizing the learning outcome and cost of program delivery.” Blended learning is designed to apply appropriate technologies to classrooms with diverse situations and to create favorable conditions for students to better achieve their learning objectives in the improved learning environments.

Bieslawski and Metcalf (2003, p. 2) define blended instruction as “a blend of instructor-led training with some type of online learning activity” that combines on-site and off-site training. Similarly, Online Encyclopedia describes blended instruction as a combination of instructor-led training and eLearning or a combination of face-to-face and distance learning. The instructional architecture of this format consists of technology-

based instructional materials and traditional print materials, and technology-based activities and classroom activities. Technology-based activities include online group/individual activities, structured learning modules, and self-study. Classroom activities include lecture, individual study, and face-to-face individual/group activities.

While the above definitions focus on instructional delivery formats, others take a broader view, including delivery formats, technologies, teaching strategies, and pedagogies. Valiathan (2002) defines blended instruction as a combination of different instructional media, designs, and strategies. In this definition, blended instruction can be a mixture of four different components; (a) instructional architectures (receptive instruction and explanatory instruction); (b) varied learning events (self-paced-individual and collaborative-group-based); (c) instructional delivery modes (classroom and online); and (d) instructional materials (non-technology-based and technology-based).

Similarly, Singh and Chris (2001) claim that blended instruction is a combination of different instructional strategies and components that are integrated into course delivery based on instructional needs. In this concept, various instructional attributes are associated with the instructional medium, allowing diverse learning activities and environments. The following combinations of instructional attributes and medium are the examples that can be incorporated in instruction: (a) offline and online learning; (b) self-paced and live collaborative learning; (c) structured and unstructured learning; (d) custom content and off-the shelf content; (e) work and learning; and (f) synchronous physical and online formats and self-paced asynchronous formats.

Furthermore, the Korean Sun Online Education Systems (2005) define blended instruction as a holistic approach that is designed to maximize learning outcomes by

integrating online and offline curriculum into educational systems. In blended instruction, learning and teaching activities are more effectively pursued since learning environments are flexible and adjusted based on situations of students and instructors.

Blended Instruction Approaches and Models

Blended Instruction in Higher Education Institutions

As mentioned above, blended instruction is described in many different ways, focusing on instructional delivery formats, instructional tools, and architectures. Yet, the common major elements in the definitions are a combination of classroom and online instruction. As mentioned in the previous chapter, blended instruction originally started from the concept of distance education, particularly online instruction; a small portion of classroom instructional components were then employed in order to fill in the gaps in online instruction. However, in practice, it is commonly found that online instructional components are merged with classroom instruction as an integral part of the classroom instruction. Thus, within the defined combination of classroom and online instruction, many different approaches are found in the use of instructional proportion, technology tools, and instructional strategies.

For instance, The Office of Educational Technology of the University of California in Los Angeles (Office of Ed Tech) defines blended instruction as a way to “offer curriculum through a combination of face-to-face and electronic mediums.” Within this definition, technologies, especially online instructional components are used to replace a significant portion of classroom instruction. This approach works well in a large classroom; since it is difficult for an instructor to accommodate diverse students’ needs in

large classrooms, a strategic instructional method such as blended method is necessary (Blended Instruction Case Studies, 2005). According to the progress report provided by the Office of Ed Tech (2005), there are several different approaches that have been practiced in the university:

1. Replace one or more face-to-face classes per week with online work, such as providing students with an opportunity to get more involved in research (e.g. working with data, conducting research online, working on simulations and online demonstration)
2. Provide lectures online (e.g. via WebCast or PowerPoint slides with voice over) with the expectation that students review materials before class. Face-to-face meetings are used for active learning (e.g., discussion problems, research, application problems). The number of face-to-face meetings remains the same but the learning objectives for those face-to-face meetings have changed.
3. Meet in the classroom for several sessions at the beginning of the term then have students complete work online for several weeks, then meet in the classroom every few weeks during the term
4. Replace one or more face-to-face classes per week with graduate students or peer mentor leading technologically enhanced laboratory/discussion sections
5. Replace some portions of lectures with expert-quest lecture via videoconference (online or in the class)
6. Replace some portions of lecture with small group video conferencing

As described above, practices in blended instruction are not limited to proportion of instructional formats or classroom size. There have been numerous approaches in many other universities that have been practiced differently based on instructional situations. Burgon and Williams (2003) introduced a blended course that was designed to combine traditional classroom lectures and online instructional materials for both on and off campus students. The course was an undergraduate religion course with 49 on-campus students and seven distance learners. The 49 on-campus students were taught in a traditional classroom environment with lecture. The distance learners took the course asynchronously online. The class met twice a week, and traditional lecture was used as an instructional method for classroom instruction. Course materials were uploaded online for the distance learners, and both in class students and distance learners had access materials such as course syllabus, class notes, assignments, and reading. Online discussion forums were required for both on and off campus learners to share ideas, questions, comments, and experiences.

The article claimed that, in this format, distance learners could have felt as if they were in a classroom environment while they were interacting with students in the classroom rather than only talking with off-campus students. Furthermore, classroom students could enjoy talking with distance learners since the distance learners brought their various experiences to online discussion forums. The classroom students could also use online class notes for reviewing the concepts that they could not understand in class. In addition, the distance learners could experience a “more intangible aspect of the institution embedded in the cultural transmission of synchronous on-site courses”

(Waddops and Howell, 2002) through discussions with in class students. The authors claim that this type of blended course benefits both in class and distance learners.

A report by Cottrell and Robison (2003) illustrates another example of blended instruction that was designed to improve students' learning in an accounting class. Typically, accounting classes handle formulas, equations, debates, and technology devices, and it is easy for students to get bored or lost in the learning process. In this case, the instructor attempted to better achieve the course objectives by providing students with online course materials and activities. The students learned how to use technical devices in class and practiced using online tutorials to apply the knowledge to problem-solving situations.

In particular, one of the biggest problems in this class was the differences in students' competency levels in understanding concepts and handling technical devices. Blended methods helped minimize the differences in students' ability to handle the materials by making online help sessions available to them. The class was composed of typical lecture while homework problems, work examples, and consultation sessions were handled asynchronously online after class, using multimedia presentations. The multimedia presentations provided students with homework answers, step-by-step processes to reach solutions, and other helpful information regarding class materials, using diagrams. The students in the course reported that the online instructional components were extremely helpful. They could review "difficult and hard-to-understand portions of the pre-recorded lecture repeatedly" and eliminate some unnecessary and inconvenient steps in a question and answer process with the professor that might happen in classroom settings.

At the University of Central Florida (Dziuban and Moskal, 2001), a typical three hour classroom instruction was replaced with a two hour online instruction session. This change was successful for both the university and students, financially and practically. The university was able to operate multiple classes in one classroom more efficiently, using the existing infrastructure of the university. Since an instructor could handle a large class with the combination of class and online instruction, it was cost efficient for the university as well. Students were able to be engaged in the course more actively through online activities, while in a large class it is difficult to make any personal contact with professors during and after the class. As a result, it was reported that students' withdrawal rates were reduced, and the students enjoyed the course more when compared to traditional classes.

As shown, a blended instructional method has been readily practiced in many higher education institutions, and positive results have been reported. According to Young (2002), the number of universities which implement blended instruction increase every year; he predicted that within 5 years, a significant number of schools will use some type of blended instruction.

Blended Instruction in Business Settings

Blended instruction is applied in different ways in other settings. In business organizations, the implementation of blended instruction emerges from the failure of traditional training. It has often appeared to companies that the training is not effective in improving performance in workplaces. Thus, blended instruction, combining e-learning components with traditional training, was suggested as a means of assisting trainees in attaining necessary skills and knowledge. E-learning components usually consist of EPSS

(Electronic Performance Support Systems), KM (Knowledge Management), CBI (computer-based instruction), and synchronous or asynchronous online instruction. This blended approach provides a holistic process of instructional design, integrating human and technological resources (Bielawski and Metcalf, 2003).

In particular, unique conditions within organizations make blended instruction more valuable. Generally, organizations must continuously and successfully produce items and services; yet they often fail to provide sufficient working conditions for employees; (i.e., conditions providing clear goals and necessary support for performance). It has been claimed by instructors that instructional goals are not accomplished by training only. In most cases, traditional training alone cannot be an effective approach to resolving performance problems. There must be an alternative to cover the defects in traditional training.

Many organizations now take advantage of technology by combining online training and traditional classroom training since the blended approach addresses learners' diverse needs. Parts of the learning process that require direct contact with instructors are handled in classroom situations while the rest is available in an Electronic Support System or e-Learning format (Rowley, Bunker and Cole, 2002).

According to Valiathan (2002), blended learning can be categorized in three ways: (a) skill driven; (b) attitude driven; and (c) competency driven. In a skills driven approach, a combination of self-paced learning modules and classroom instruction support student learning of knowledge and skills through a step-by-step process learning process. In this approach, learners are expected to complete learning materials such as books and papers along with asynchronous self-paced online learning modules.

Instructors support learners using online communication systems such as email, discussion forums, and instructor-led contact sessions.

In addition, instructors may demonstrate procedures or processes of skills and knowledge to be achieved in synchronous web-based classes or scheduled classroom instruction based on their students' needs. The synchronous sessions provide opportunities for students to learn how to apply their skills and concepts obtained in class. The techniques needed in this approach involve instructors who have to align appropriate time and topics in both asynchronous and synchronous instruction with the characteristics of the learners.

The attitude-driven approach is described as an instructional approach that blends various collaborative learning events in an effort to develop specific behaviors and attitudes in learners. In an attitude driven approach, both classroom instruction and technology-based collaborative learning events are scheduled. This approach is useful when teaching content that requires peer-to-peer interaction. In this approach, higher order thinking, negotiation, and critical reflection skills can be developed through group work and discussions with peers using technology-enhanced communication tools.

The competency driven approach is an instructional approach that is designed to teach tactical knowledge. In this approach, various media are applied to learning events in an effort to guide students in learning facts, principles, and skills that are required in the process of making decisions. *Figure 2* depicts each approach briefly.

	Skill-driven approach	Attitude-driven Approach	Competency-driven Approach
Methods	Online learning modules	Collaborative learning	Mixture of media
Targets skills/knowledge	Skills and knowledge	Higher order thinking, Critical thinking	Tactic knowledge

Figure 2. Blended Instructional Approaches

* Source: Blended instructional approaches (NITT)

Advantages of Blended Instruction

As repeatedly mentioned, blended instruction initially originated from efforts to improve distance learning environments, particularly online learning environments in which learners can be easily disoriented due to a lack of communication or direct guidance. Savery and Duffy (1995) claimed that there are two factors that affect learners' attitudes toward learning: the familiarity with the instructional medium and their ability to make something meaningful out of the material presented. Their research revealed that when comparable content was presented, both on-screen and in printed text, the information presented on screen was mentally less demanding than the printed text. Learners found it difficult to make connections between information presented and its value due to the unfamiliarity of the presentation mode.

Marsh II et al. (2004) suggested basic strategies for improving student learning: one is to put greater responsibility on students and the other is to improve the presentation method by utilizing assisting tools such as technology. Consequently, in online instruction, there have been many attempts to improve the presentation mode by employing advanced technology tools or adding classroom meetings to online instruction.

For example, many higher education institutions have adopted online course management systems (e.g. Black Board, Web-CT, Centra, etc.) as a part of technology-mediated learning systems for both classroom instruction and distance education. These learning systems provide new and improved services to students and instructors as an alternative or supplementary instructional delivery mode in order to improve the presentation mode (Murphy, 2002, 2003).

Advantages of online learning components often include learning properties such as (a) bridging the instructional gap of physical distance so that people who are remote from the classroom can be benefited; (b) providing student-directed and self-directed instruction so that learners have control over information flow, pace of instruction, selection of learning activities, and time management; (c) offering tools capable of facilitating learners' diverse needs; (d) bringing about globalization in education and many other fields; (e) encouraging teachers to monitor learning performance and store the record; and (f) providing students with a variety of learning experiences through simulations and resources at a low-cost (Riding and Rayner, 1995). Also, online learning environments can enable some students to belong to a learning community, even though the delivery medium may not affect educational outcomes such as student achievement, satisfaction, and perceptions (Brenner, 1997). Anderson and Thalheimer (2003) also mentioned several advantages of online instructional components such as capability to store and retrieve information, utilizing information and feedback regardless of time and place, and reusability of materials for next learning events.

Unlike the initial intention, practical models of blended instruction are often employed to increase the efficiency in classroom instruction rather than online instruction.

In many of the applications described in this chapter, blended instruction has been implemented to provide students with flexibility and options in time, place, and accessibility to course content. Sikora and Carroll (2002) reported that “students in higher education tend to be less satisfied with totally online courses when compared to traditional courses.” Therefore, based on many studies (Colis and Moonen, 2001; Murphy, 2002, 2003; Valiathan, 2002), a mixture of two instructional formats is the best solution for instructional problems and needs.

Blended instruction case studies (Esfandiari, 2005; Kerfeld, 2005; Posner, 2005) initiated by the Office of Ed Tech at the UCLA and a report by Valiathan (2002) showed that a combination of two instructional delivery provides great advantages for students, instructors, and institution. For students, the instructional method provides (a) active learning environment in whom to engage with the content; (b) accommodation for diverse learning styles; (c) opportunities to interact with faculty and students; (d) opportunities to obtain skills in using related technologies and developing learning skills; (e) flexibility in using time and resources; and (e) access to resources.

For faculty, the instructional method provides (a) more time to spend with students individually and in smaller groups; (b) less time spent on basic concepts required to create and maintain a level playing field for all students; (c) greater opportunity to use their expertise and research in instruction; (d) greater potential for using face-based sessions for learning experiences which are critical to the course purpose and content; (e) greater opportunity to respond to a diversity of student needs and capabilities; (f) improved quality of interaction with students; and (g) increased effectiveness in using electronic tools and resources.

For the institution, the blended approach provides (a) greater student and faculty satisfaction; (b) improved student' ratio of small classes to large classes; (c) improved retention in major and shorter to get a degree; (d) improved integration of students from diverse academic backgrounds into the academic community; (e) improved potential to shift the academic focus to learning, community, and research and away from seat time and courses; (f) increased flexibility in defining and scheduling courses; (g) improved usage of limited resources, such as classrooms and parking; (h) a return on the IT investment .

The Pew Grant Program in Course Redesign (1999, 2002) was initiated to encourage universities to improve course quality by redesigning existing courses using a blended method. Many participating universities reported very positive results from redesign of their courses. In particular, the University of Wisconsin-Milwaukee (Christoph, 1999) and the University of Central Florida (Sorg, 1999) reported that students in blended courses were more successful in their learning than students in traditional face-to-face or totally online courses. According to instructors at UW-M, students in blended courses produced better papers and were engaged in more meaningful discussions of course materials. However, the participating universities emphasized that an intentional approach is necessary to bring about meaningful results not just changing the delivery format when redesigning courses.

Murphy (2002, 2003) also reported that in the case of UCLA, after redesigning courses with technology-enhanced materials, course instructors were able to save their time in preparing for classes and handling questions regarding class works. Students tended to go to the course websites to seek necessary information rather than asking

instructors or TAs in and after classes. In addition, when class assignments and tests were delivered online and automatically scored and posted online, instructors could spend less time on administrative tasks such as grading and answering routine questions regarding class management. As a consequence, instructors could better serve for students' needs while enjoying interaction with students in a more flexible manner.

How to Blend Instruction

Instructional Components in Blended Instruction

Blended instruction is described in many different ways, yet classroom and online instruction are the two major instructional delivery modes. Instructional components in each mode depend on characteristics of courses and instructors' capability, knowledge, and decisions in designing instruction with the technology tools and media that are available to use on campus. *Figure 3* depicts common instructional components in blended instruction based on the reports from several universities such as Harvard University, the University of California system, University of Central Florida, University of Northern Texas and others.

In the approach used in the Korean Sun Online Education System, a blended learning model consists of four components [teaching, coaching, studying, and practicing]. Teaching refers to online content delivery to learners. Coaching refers to instructor-guided practice in both online and offline environments. Practice refers to authentic practice through hands-on experience using simulations or virtual learning activities.

Blended Instruction (Courses in which a portion of online instruction is replaced by classroom activities)					
Online instruction			Classroom instruction		
Environment	Activities	Applications	Environment	Activities	Applications
1. Computer-based online learning 2. Synchronous 3. Asynchronous 4. One-way communication 5. Two-way communication	1. Lecture 2. Practice 3. Self-study 4. Discussion 5. Assignment 6. Group work 7. Simulation 8. Assessment	1. Course Management Tools (CMT) 2. Video 3. Audio 4. Presentation Tools (Power Point, Flash, etc.) 5. Communication tools	1. Classroom 2. Synchronous 3. Two-way communication	1. Lecture 2. Presentations 3. Group work 4. Tutoring 5. Assessment	Vary from class to class

Figure 3. Blended Instructional Model

*The choice of activities and applications can be different depending on classroom situations such as subject, topic, instructor, etc.

Studying refers to learners' efforts to achieve desired learning goals using resources such as online self-study tools, instructor's help, and any other kinds of resources available.

Usually, instructional approaches in blended instruction require activities and applications that can be managed in self-directed or self-managed learning systems. According to Moore (1986), self-directed learning refers to learning systems in which learners organize their own learning process. In these learning systems, learners become more responsible for their learning by being actively engaged in determining learning objectives, activities, and an evaluation plan based on their needs and competency levels. Instructors become facilitators who provide general guidelines, feedback, questions, resources, and learning environments that are suitable for all learners. As a

facilitator, an instructor needs to analyze learners' progress, evaluate their performance and give feedback in order to guide them to achieve desired learning objectives.

Self-managed learning (SML) refers to a learning system in which learners determine learning objectives, learning times, learning methods, and presentations of learning outcomes by utilizing various educational resources. SLM emphasizes active engagement and self-regulation in achieving learning goals. In this system, self-motivation is one of the most important concepts for students. In practice, as in traditional classroom, text books are required, and topics are covered with lecture notes and activities within a given time frame. Technology applications such as multimedia presentation tools, streaming video and/or audio are used to present course materials and classroom lecture equivalent situation can be created as individual work. This type format contributes to easing the manpower problems in universities while providing students with control over time and place in their learning process.

Online collative learning is considered one of the best practices in technology-based learning environments. Online communication tools such as discussion forums, virtual classrooms, listservs, blogs, etc. support individual and group activities for research and group projects in synchronous or asynchronous online learning environment. These tools also support diverse pedagogical approaches and different learning models such as problem based learning and cooperative learning to get students to work together regardless the size of work groups (Slavin, 1987).

E-learning Alex Korea (2005) has claimed that utilizing networking capability brought about paradigm changes in teaching and learning. While previous instructional models did not incorporate the concepts of school, instructor, and classroom with society

and other organizations, current network learning emphasizes teamwork, authentic experience, and applicability of learned concepts to real world situations. Network learning environments connect peers, educational resources, and an instructor with each other and allow students to be exposed to diverse information resources. Consequently, class activities become more live because of connection of online resources and activities and out of class time. Opportunities for students to interact with peers and course materials increase during out of class time.

Rossett et al. (2003) claimed that for successful blending, instructional tools and design strategies are important components, and all the components within the instructional method should be appropriately integrated. Usually, in a blended model, there have been specific instructional elements as listed in *Figure 3* (p. 35). However, options for blending are wide open to instructors, not just limited to the activities and applications that have been known or used in the past. Instruction can be composed of a combination of formal and informal approaches, technology- and people-based activities, independent and convivial activities, or directive- and discovery-oriented items. The right blend depends on instructional conditions and instructors' own judgment and decisions in applying their instructional strategies for their instructional needs, Rossett stated.

Issues Related to Blended Instruction

The number of blended courses is rapidly growing every year and an increasing number of universities are attempting to prepare faculty for delivering courses online, with plans to provide students with more options in tailoring their programs. However, there are still issues related to delivering courses with online components. These become

as challenges for faculty, institutions, and instruction. In fact, issues such as instructional support, faculty motivation and enthusiasm, and technology problems have been raised as problems in developing online instruction in many institutions for a long time (Barr and Tag, 1995). Many writers (Barr and Tag, 1995; Johnson, 2002) have claimed that university policies should be revised for faculty who are motivated to pursue newer instructional formats; promotion policies such as tenure should be revised based on the faculty workloads and levels of engagement in extra instructional activities.

Rovai (2003) reported that one of the critical issues in blended instruction is a lack of evaluation procedures for this instructional format. The primary aim of instruction is to achieve learning objectives and influence students toward positive behavioral changes. The process of identifying the degree to which the learning objectives are achieved is the basis for assessment of students and for course evaluation. Since evaluation is a process of reflection and revision, it is very important for instructors in planning further instruction. However, few researchers have found appropriate evaluation frameworks and procedures for blended instruction in academic settings.

According to Oh and Lim (2005), the evaluation process that is currently being used for university courses focuses on either online or classroom instruction. In many cases, instructors use course evaluation instruments that are designed for distance education as an alternative choice for evaluating blended instruction. The evaluation criteria in these instruments often do not take into account particular aspects of the blended instructional method. The lack of an appropriate course evaluation method raises issues regarding different evaluation needs for blended instruction. Given the fact that

blended instruction is widely used in many institutions, a standardized evaluation framework for blended instruction is necessary in those settings.

Summary

Blended instruction is defined in many different ways. One of the common approaches is to define as an instructional delivery method that online instruction is incorporated with classroom instruction to create robust instructional components (Colis and Moonen, 2001). In classrooms, online instructional components are merged with face-to-face instruction as an integral part of the classroom instruction to better accommodate students' needs in class. In business organizations, parts of the learning process that require direct contact with instructors are handled in a classroom situation while the rest is available in an Electronic Support System or e-Learning format (Rowley, Bunker, and Cole, 2002). Many successful results have been reported by universities and organizations that have implemented blended instruction. It is reported to be beneficial to students, instructors, and instruction. According to Young (2002), a blended instructional method has been practiced in many higher education institutions for both classroom and online courses. The number of universities that implement some form of blended instruction increase every year, and within 5 years, a significant number of schools will use some types of blended instruction. However, one of the issues that has been recently raised is a lack of evaluation procedures for blended instruction. The evaluation process that is currently being used for university courses focuses on either online or classroom instruction. Given the fact that blended instruction is widely used in many institutions, a

standardized evaluation framework for blended instruction is necessary in many institutions.

CHAPTER III

METHODOLOGY

Purposes

The purposes of this study were to investigate definitions of and current practices in blended instruction, particularly focusing on predominant characteristics and potential variations of blended instruction. The study addressed these three questions:

- (1) How do faculty and institutional representatives define blended instruction?
- (2) How is blended instruction currently being practiced?
 - (a) What types of instructional delivery methods, technologies, instructional components, and assessment methods are currently being used?
 - (b) Why, how, and to what extent do faculty blend instruction and to what extent is blended instruction being used in higher education institutions?
 - (c) Are instructional practices different based on institutions, disciplines, and characteristics of instructors such as age, gender, experience, and position?
- (3) In what ways are faculty involved in blended instruction?
 - (a) Are faculty involved in developing, designing, and maintaining online instructional components?
 - (b) What are faculty attitudes toward and perceptions of blended instruction?
 - (c) How do institutions support faculty involved in blended instruction?

Population and Sample

Study Population

The target population of this study was IHE coordinators or others who were responsible for online instruction and/or assistance to faculty, and faculty members who were actively involved in blended instruction in higher education institutions. As a study population, staff and faculty members from the 151 universities that are classified as extensive doctoral universities by the Carnegie Classification of Institutions of Higher Education were selected. The extensive doctoral research universities were taken as a research population for this study since those universities are perceived to be pioneers in the research and practices of distance learning.

The extensive doctoral research universities are distinguished from other universities in regard to mission, responsibilities of faculty members, technology support, and resources available. In these universities, relatively more teaching and learning resources and research opportunities are available to faculty and students than in many other institutions of higher education. Consequently, the extensive doctoral universities often take a leading role in various academic disciplines and are more likely to be places where a variety of instructional practices actively occur.

A list of the 151 universities selected was obtained from the online catalogue on the Carnegie Foundation's Website:

The Carnegie classification of Institutions of Higher Education is a taxonomy of US higher education institutions that has been used for a wide variety of purposes over three decades. The Carnegie classification was developed in the early 1970s by the Carnegie Commission on Higher Education to serve its

policy research needs. The extensive doctoral research universities typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. During the period of study, they awarded 50 or more doctoral degrees per year across at least 15 disciplines. (Carnegie Commission, 1973, P.V.).

The procedure used to identify the targeted universities and study participants within them was cluster sampling. Cluster sampling refers to a process of selecting groups of entities or persons with similar characteristics. This sampling technique is used when entire population is divided into groups and clusters are selected (Gay and Airasian, 2000). A clustered group classified as the extensive doctoral research universities was used as a sample population since the total population is so large.

The Sample

Within the selected universities, potential participants were divided into two different groups: group A and group B. Group A included 151 administrators who served as directors or staff members in the institutes/organization designed to assist faculty in delivering online courses. In many cases, higher education institutions have an organization that is responsible for helping faculty, instructors, and academic staff enhance their teaching and learning with technology. The contact information for the organization that is on each university's website was obtained, and participants were contacted by the investigator by email. The initial email messages were sent out upon receiving an approval from the Institutional Research Board. Five reminders were sent, one every 10 days. Of the 151 potential respondents, 34 (23%) participated in this study. The list of universities participating in group A is found in Appendix A.

The procedure for selecting a sample for group B was composed of two stages. First, 20 universities were randomly selected from the list of total 151 universities. This subset of the total population was used as a source of participants for group B. In order to select the twenty participating universities, the 151 originally selected universities were arranged in alphabetical order and assigned a number from 1 through 151. The numbers were entered into a Microsoft Excel program and twenty random numbers were generated using the random number generation method. The universities corresponding to the generated random numbers were chosen. Second, from each chosen university, two participating departments were selected, and faculty members in those two departments constituted a sample population for group B. The investigator selected the two participating departments on the basis of levels of engagement in online instruction. Necessary information was obtained from the universities' websites.

Before proceeding with the actual study, the investigator obtained a letter of permission from deans or department heads of each participating department in order to conduct research with faculty. In the event that permission within the selected department was not given, another department in same university or another university in the target population was immediately selected using random number selection.

All faculty members in the selected departments were invited to participate in the study by the investigator through email. If, after five reminders, fewer than three faculty members agreed to participate in the study from the selected department, another department in the same university was immediately contacted using the same procedure. This procedure was repeated from May 2005 to the first week of June 2005. Authorization for participation was given by 50 department heads or dean of colleges

from 30 different universities, and 133 faculty from 30 different institutions participated in this study.

Participation in the study was strictly voluntary. Any university or faculty members who initially agreed to participate could withdraw at any time. Initially, the total number of faculty members in the selected departments was about 1,000 faculty, however, due to the repetition of the procedures to meet the criteria, that number increased to 1,500 faculty for the actual study. The list of participating universities and departments for group B can be found in Appendix A.

Research Design

Survey method was used for this study. Two online survey instruments were uploaded on the Web and administered to the target population. Before using these instruments for data collection, they were tested with like respondents to confirm the reliability and equivalency of the test formats in the pilot phase.

Phase I: The Pilot Study

Purpose of the Pilot Study

The purposes of the pilot study were to confirm the appropriateness of the survey instruments and two types of reliability, internal consistency and equivalences (McMillian and Schumacher, 1997, p. 241). Internal consistency is a type of reliability used to measure the homogeneity of the items in survey instruments, and the equivalence test measures the compatibility of the same instrument in two equivalent or parallel forms, another type of reliability measure (McMillian and Schumacher, 1997, p. 241).

The equivalence test was conducted based on the studies by Chang (2004), Decristoforo (1992), and Sproull and Kiesler (1991). These studies claimed that individuals respond differently to different forms of instruments depending on the methodologies and situations in which the survey instruments are administered. For instance, Chang's study (2004) revealed that when administering course evaluation instruments to students in both paper and online formats, the mean scores of paper evaluation were significantly higher than those of online evaluation on each evaluation item, evaluation factor and total ratings score. Students tended to respond more honestly to online evaluation than they did to paper evaluation since there was not any time pressure and evaluation administrators were not around them. Thus, the equivalence test is used to determine if the format of instrument affects the validity of responses to online surveys.

Internal consistency was tested using the Chronbach alpha method. The responses to each section of the questionnaires were entered into SPSS, and the program generated the levels of consistency for each set of questions. Additionally, informal questions were asked the pilot participants individually regarding the appropriateness and usability of the questionnaires such as wording, terminology, contents, accessibility to the survey websites, and the survey layout were explored so that the questionnaires could be revised for use in data collection phase.

In summary, the pilot study was designed to test the instruments to determine if the survey questions would gather required information and the information collected could be analyzed.

Instruments

Two types of questionnaires were developed by the investigator, one for group A (IHE representatives) and the other for group B (faculty participants). The questionnaire for group A consisted of nine (9) questions about instructional delivery methods, and four (4) questions (one containing 7 sub-questions) about institutional support for blended instruction. The questionnaire for group B, faculty members, consisted of nineteen (19) questions about instructional delivery methods and one question (containing 10 sub-questions) about faculty attitudes and perceptions of instructional delivery methods. Four experienced researchers in instructional technology examined the survey instruments to confirm the validity of the questions. The surveys were made available at <http://web.utk.edu/~eoh1/onlinesurvey1> for group A and <http://web.utk.edu/~eoh1/onlinesurvey2> for group B. Copies of the instruments can be found in Appendix B.

Participants in the Pilot Study

The participants for the pilot test included four (4) Innovative Technology Center (ITC) staff and twenty two (22) faculty and instructors out of the total 180 faculty from seven (7) different departments of the University of Tennessee. The pilot test took place in April and May 2005.

Participants in the equivalence test. The equivalence test of the survey instrument for group A included four staff from Innovative Technology Center (ITC) of the University of Tennessee. The participants' positions were coordinator, manager, and multimedia specialists. Two (2) males and two (2) females were included in Group A. All of them had more than four (4) years of experience in assisting faculty in developing

online courses. These four participants completed the survey in both online and paper formats.

The equivalence test of the survey for group B included five (5) instructors and one (1) assistant professor from the department of Instructional Technology and Educational Studies. Of the 6 participants, two (2) participants were female and four (4) participants were male. Five (5) participants had more than nine (9) years of teaching experience, while only one participant had less than three (3) years of teaching experience.

Participants in the internal consistency test. The internal consistency test included twenty two (22) faculty and instructors from seven (7) different departments at the University of Tennessee. The total population selected for participation in this test consisted of one hundred eighty (180) faculty and instructors; however, only 22 email recipients participated in the study because others chose not to participate in the study.

Among the 22 total participants, 11 (50%) were males and 11 (50%) were females, two (2) (18.2%) were assistant professors, three (3) (27.3%) were associate professors, three (3) (27.3%) were full professors, and three (3) (27.3%) were instructors. The participants were from several discipline areas, instructional technology, marketing, math education, retailing, etc. All the 22 participants completed the online survey, but only six (6) participants completed both online and paper survey instruments to compare the survey results. Those who participated in both formats were five instructors and an assistant professor. *Table 1* summarizes the information regarding the participants of group B.

Table 1. Demographic Information for Group B Pilot Study Participants

	Gender			
	Male		Female	
	Position		Position	
	Frequency	Percent	Frequency	Percent
Assistant professor	2	18.2%	2	18.2%
Associate professor	3	27.3%	5	45.5%
Full professor		27.3%	1	9.1%
Instructor	7	27.3%	3	27.3%
Total	11	100.0%	11	100.0%

Procedures of the Pilot Study

The investigator selected the participating university and the sample population for the pilot study based on accessibility. Email addresses of the sample were obtained from the departments' websites. An email message describing the purposes and procedures of study, and the request for participation were created and uploaded on the Web. The survey instruments and informed consent form were also uploaded on the Web. The informed consent form was hyperlinked from the email message and the survey instruments were hyperlinked from the consent form.

Upon obtaining an approval from the Institutional Research Board (IRB), potential participants were contacted by the investigator by phone or email. The selected group of people (6 instructors and 4 staff of the ITC) for the equivalence test was contacted by phone and email. After obtaining permission from the participants, the paper surveys were hand delivered to them individually, and the completed survey instruments were collected at their convenience. After collecting the paper copies, email messages were sent to the participants, asking for completion of the online survey.

After collecting the paper and online survey results from the 10 participants in the equivalence test, email messages were sent to the 180 target participants for the internal consistency test. All the faculty members in the selected departments were invited to participate in the study, but it was clear that participation was voluntary and that participants could withdraw their participation at any time, even though they might initially agree to participate in the study. Reminder messages were sent to the faculty who had not responded to the questionnaire one week after the initial contact, and second reminders were sent one week after first reminder.

The uploaded informed consent form was hyperlinked to the email message. The recipients were directed to go to the informed consent form by clicking the hyperlink given in the email messages and complete the form if they agreed to participate in the study. When the participants completed the informed consent form and clicked the “agree” button placed at the bottom of the page, the informed consent form was automatically submitted to the investigator’s email account, and the participants were led to the online survey page. The completed survey was also submitted to the investigator’s email account when the participants completed and clicked the “submit” button placed at the bottom of the survey.

Of the total 180 possible participants, 16 faculty members (12%) submitted their survey results and the informed consent forms. The six (6) participants who participated in the equivalence test were included for the internal consistency test as well and the total number of participants in the internal consistency test was 22 instructors and professors.

The investigator printed the informed consent forms (for filing) and survey results for data analysis. The informed consent forms and survey results were treated

confidentially. If a respondent did not complete an informed consent form, her (his) survey was not included in the survey.

Results of the Pilot Study

The survey results were analyzed to determine the equivalence and internal consistency of survey instruments.

Results of the Equivalence test. The survey instrument (*Instrument A*) consisted of 13 questions with two sections: instructional delivery methods and instructional support. All four (4) participants responded to the questions in the same way for both formats of survey instruments except for one question. One of the respondents selected one more answer for Q5 on the paper survey than he/she did in the online survey. Question five (5) consisted of thirteen (13) examples, and those examples were arranged in a manner that made the question difficult. In applying responses, it became clear to the researcher that the examples in the pilot instrument were arranged so that the respondents might overlook or be confused by some of them since similar items were put in a row with little space between items.

Five (5) instructors and one (1) assistant professor completed survey B in both paper and online formats and 16 faculty members completed the online survey only. The results of the returned surveys were compared to determine the levels of equivalency of the online and paper instruments. The survey results showed at least one different answer in Q2, 5, 7, 8, 9, and 20 of the two forms of the instrument. Among the six questions there were three questions that more than one participant answered differently when responding to the online and paper surveys. Those were the questions containing many examples and Likert scale responses. In detail, Q2 with eight (8) example items, Q5 with

12 items, and Q6 with nine (9) items with six (6) items). Responding to Q1 and Q5, three (3) participants chose one (1) or two (2) more items for the response to the paper survey than in the case of online survey. For Q20, two (2) participants chose different Likert scale responses for statements (a) and (g); the responses for those statements on the paper survey were one (1) score higher for both statements than their responses on the online survey. However, the differences in responses were not statistically significant when comparing the mean scores of the questions using the independent T-test ($p>0.05$).

In summary, out of twenty questions (20), there were six (6) questions in which discrepancies showed in participant responses. In general, the participants tended to select more example items and marked a higher score on the paper survey than they did on the online survey. The comparison yielded 70% equivalence of responses for the two forms of instruments for group B. However, statistically, the overall survey results were not affected by these differences since the variability in their answers was not significant when tested using the T-test ($p>0.05$). In addition, these results were limited to 6 pilot participants, and it could not be predicted that the same results would occur in the actual study.

Results of the Internal Consistency Test. The internal consistency test was performed on the 22 surveys returned from “Group B”. The test resulted in 0.74 consistency for the group of questions regarding the instructional delivery formats. For the questions regarding the faculty attitudes toward instructional delivery methods, the internal consistency coefficient was 0.46. The faculty attitudes result was probably influenced by the small number of questions. In addition, seven participants in both group A and B reported that they were not familiar with the terminology, blended instruction. However,

most of the participants responded that the questions were focused, comprehensive, researchable, and able to handle the topic well.

The surveyed instruments were revised based on these pilot test findings, but most of the items were used in Phase II of the study. Revisions consisted of clarification of the definition of blended instruction, rearrangement of examples and questions, and rewording of questions. In both survey instruments, a question asking for the participants' own definitions of blended instruction was added. In order to focus on blended instruction as a combination of online and classroom instruction, the definition of blended instruction for the study was provided in the survey instruments after the first 12 questions, and the survey instruments asked the participants to stop completing the questionnaire if their definitions did not match the definition given.

In the case of survey A for organizations, the examples in question 5 (five) were divided into two groups, tools and activities, since the clustered examples caused the confusion. The number of questions was increased from 13 to 14 through the addition of one question.

In the case of survey B (faculty), one more example was added in question 4, the examples in question 7 were divided into two (2) groups, tools and activities in online instructional environments, and were arranged to lessen confusion, as was done with the Group A survey. Questions eight (8), nine (9), and 10 were merged and reformed to answer the research question asking about instruction tools and activities in blended instruction. Question 19 was reworded so that the participants could better understand the question.

Phase II: The Actual Study

Instruments

The survey instruments used in the actual study were those used in the pilot, but survey method was same as previously described. They were designed to obtain information regarding current practices in blended instruction in higher education institutions. The survey questionnaires attempted to identify characteristics and variations of blended instructional methods by collecting data from faculty and IHE representatives who have been/are currently involved in blended instruction in some way. Both instruments were composed of multiple choice and open-end questions so that the respondents could have options and the flexibility to provide individual experiences, ideas, and more in-depth knowledge through the open ended questions.

The final questionnaire for group A consisted of ten (10) questions about instructional delivery methods that were currently being used in each university, and four (4) questions (one containing 7 sub-questions) about institutional support for various instructional delivery methods. Based on the types of questions, there were one open-end , one requiring Likert scale responses to six (6) items, and the remainder were multiple choice questions that allowed respondents to check all that applied to their situations. Each multiple choice question contained a comment box so that respondents could provide additional comments or more in-depth information regarding the topics.

The questionnaire for group B consisted of 18 questions about practices of instructional delivery and one question (containing 10 sub-questions) about faculty attitudes and perceptions of instructional delivery methods. There were three (3) open-

end questions, two (2) Likert scale questions with six (6) scores, and the rest of the questions were multiple choice questions as in the questionnaire for group A.

Data Collection Procedures

Participation in this study was voluntary. However, the participants were asked to provide their email addresses on the returned survey so that the investigator could send a reminder message to those who did not respond to the first email message. The informed consent form and two surveys were uploaded on the Web and could be submitted to the investigator's email account after completion.

Upon receiving IRB approval, email messages were sent to the 151 IHE representatives (Group A) to request their participation in the study. To develop group B, email messages were sent to the deans or department heads of the targeted universities to obtain permission to conduct a survey of their faculty members. After obtaining permission from these respondents, email messages that described the purposes and procedures of the study and requested participation were sent to faculty members in the selected departments. Since there was only one participant from each university in group A, permission from the institutions was not required. However, in the case of group B, permission had to be obtained from an authorized person for each department's faculty members to be contacted. At least 100 departments were contacted, and 50 permission letters were received from 30 different schools. Three reminders were sent to the departments' heads or deans who did not respond to initial email messages, or another department within the same university was contacted immediately when there was no response after the three (3) reminders.

The informed consent form was uploaded on the Website and hyperlinked from the email message. Participants could access the informed consent form by clicking the hyperlink given in the email message and complete it to agree to participate in the study. The informed consent forms were submitted to the investigator's email account when the participants completed the form and clicked the "agree" button placed at the bottom of the page. Participants were then led to the survey page to complete the survey. Upon completion of the survey, the survey responses were submitted to the investigator's email account. The investigator printed the informed consent forms and the completed surveys were filed. Survey responses were entered into SPSS for data analysis.

In summary, the data collection procedures were as follows:

Stage 1. The list of the extensive doctoral universities was obtained from the Carnegie Foundation Website. The investigator visited the website of each university in order to collect the contact information for offices/persons/organizations within the university designed to assist faculty members in delivering courses online. The investigator then sent an email message to those persons that described the study purposes and procedures, and requested participation in this study. An informed consent form was uploaded on the Web and was hyperlinked from the email messages. The email recipients went to the informed consent form by clicking the hyperlink given and completed the form if they agreed to participate in the study. They submitted the informed consent form by clicking the "agree" button placed at the bottom of the page. Participants were then led to the survey page to complete the survey. The investigator sent five (5) follow-up email messages to those who did not respond to the survey. Copies of the letter and informed consent form can be found in Appendix C.

Stage 2. For the faculty survey, twenty participating universities were randomly selected, and two participating departments were selected from each university on the basis of engagement in online instruction. The investigator selected the participating departments according to the information on their Websites. Discipline areas represented were different from university to university, since the department selection was based on engagement in online instruction. After selecting the universities and departments, the investigator obtained the contact information for department heads or deans of the participating units and sent them email messages to obtain permission to conduct a survey of their faculty members. When permission was not granted after sending three (3) reminders, another department in same university or another university was selected and contacted immediately. A copy of the email message can be found in Appendix C.

After obtaining permission to conduct the survey, email messages were sent to the possible faculty participants and five (5) reminder messages (one per week for five weeks) were sent to the faculty who did not respond to the initial email message or other following. When fewer than three (3) faculty members from each selected department agreed to participate in the study, a different department in the same university was selected for participation. This procedure was repeated until there were at least three (3) participants from each of two departments in a chosen university. When these selection criteria were not met, another university from the list of 151 universities was randomly selected, and the procedures were repeated.

Ultimately, permission to survey was granted by 50 departments' heads or deans from 30 different universities, and all the faculty in those departments were contacted. However, only nine (9) universities met the criteria that were established for this study (at

least three (3) faculty participants from a single department). However, 21 universities, there were fewer than 6 faculty participants since at least one participating department had fewer than 3 faculty participants. Therefore, the findings from this study cannot be generalized to the 151 extensive doctoral universities, but will be limited to the universities and departments of participating faculty. The list of participating departments and universities are available in Appendix A.

Data collection took place during Spring semester (2005). End of spring semester and beginning of summer vacation for most of the universities occurred by the first week in June, and the return rate was impacted by this schedule. However, surveys were returned from geographically diverse universities.

Return Rate

Of 151 IHEs in the targeted population, 34 IHE representatives (group A) responded to the survey instrument for an overall return rate of 22 percent. Of approximately 1,000 in the targeted population, 133 faculty members (group B) from 30 different universities responded to the survey instruments, for overall return rate of 13.3 percent. The return rate for group B could not be accurately calculated since the response rate for the faculty participants was estimated based not on the actual number of faculty members in the participating departments, but based on the number of email messages sent. Also the actual number of faculty who received the survey instrument was not accurately counted due to procedural problems during the process of sending email messages. Many email messages were returned or not delivered for various reasons (e.g. retired, incorrect address, security systems, absence, deleted, etc.). In addition, two of the

participating departments sent the survey through their department listserv and the number of faculty members in the departments was not given to the investigator.

In the case of group A, of the total 34 respondents, 33 recipients completed the entire survey questionnaire, and only one person left some questions incomplete, while several of the group B respondents (faculty group) did not respond to the questions completely. Specially, of the 133 total respondents, 118 faculty returned their survey instruments fully completed while 17 respondents stopped at question #12 that asked for the respondents' own definitions of blended instruction and instructed the respondents to stop completing the survey when the respondents' definitions of blended instruction were different from the one given in the survey instrument. It can be assumed that these 17 participants did not agree with the definition provided by the researcher. Furthermore, some questions were skipped without any explanations provided by the respondents; therefore, the total number of responses was different for each question.

Analysis of Data

The responses to the survey instruments were analyzed using two different software programs. Text Analysis was used for the content analysis of the qualitative responses, and SPSS was used for the quantitative responses. Content analysis is a method in which responses are categorized into types, and the frequency of items in the same categories are counted to measure the themes. The responses to the open end questions Q6 (A), Q12 (B), Q16 (B), and Q17(B) were entered into Text Analysis for the analysis. In Text Analysis, the frequencies of words/themes and the context in relation to the rewriting words/themes in a series of responses are counted to determine the themes

in the responses. The results are summarized descriptively, and the findings are presented in tables in a quantitative format.

Responses to the multiple choice questions were entered into SPSS to be analyzed, and the data were summarized descriptively using frequency tables and figures. In addition, inferential statistics (e.g. Independent Sample T-test, Chi-square test, Phi and Lambda coefficients test) were used to compare the data by variables such as gender, institutional type, and participants' teaching experience. Detailed information regarding the relationship of survey data to each research question is provided below. Copies of the surveys are provided in Appendix B.

Question 1. *How do faculty and institutional representatives define blended instruction?*

To answer this research question, survey question Q 12 for faculty and six (6) for organizational representatives (The term “blended instruction” is currently being used in several different ways. How would you define “blended instruction”?) asked for a definition of blended instruction”. Responses to these questions were sorted by the “instructional delivery systems”, “technology”, and “instructional components”, and are presented in a frequency table.

Question set 2. *How is blended instruction currently being practiced? (a) What types of instructional delivery methods, technologies, instructional components, and assessment methods are currently being used?(b) Why, how, and to what extent do faculty blend instruction and to what extent is blended instruction being used in the higher education institutions? (c) Are instructional practices different based on institutions, disciplines, and characteristics of instructors such as age, gender, experience, and position?*

Survey questions Q 1,3, 4, 5, 9 (A) and Q 1,5, 6, 7, 8 (B) addressed current practices in the use of different delivery methods, technologies, instructional components,

and assessment methods in blended instruction. Survey questions *Q1 (A)* and *Q1 (B)* asked for instructional delivery methods; *Q 3, 4 (B)* and *Q5, 6, 7, 8 (B)* asked for types of technologies, and instructional components; and *Q 9 (A)* asked for assessment methods that were being used in blended instruction.

In order to answer research question 1(a) (What types of instructional delivery methods, technologies, instructional components, and assessment methods are currently being used?), responses to these questions were counted by category, and the summary of distribution is presented in a table.

Survey questions *Q1, 2, 7(A)* and *Q1, 2, 3, 4, 13, 15, 16(B)* were designed to examine the extent to which blended instruction was being used, the reasons why blended instruction was being used, and how faculty blended instruction, if they did.

Questions *Q2, 13, 15, 16 (B)* and *Q7 (A)* asked for the reasons why faculty used blended instruction. Questions *Q2 (A)* and *Q4 (B)* asked how faculty blended instruction, and *Q1, 3, 4 (B)* and *Q1 (A)* asked to what extent faculty used blended instruction. In order to answer research question 1 (b) (*Why, how, and to what extent do faculty blend instruction and to what extent is blended instruction being used in the higher education institutions?*), the distributions of responses to these survey questions are summarized in tables and graphs.

For answering question 1(c) (*Are instructional practices different based on institutions, disciplines, and characteristics of instructors such as age, gender, experience, and position?*), responses to research questions 1(a) and 1(b) were analyzed according to institution, disciplines, and faculty characteristics and were compared in order to examine whether there were any differences in practices based on institutions

and instructors. A Chi-square test and T-test were used for this analysis. The Chi-square and T-test examine whether there are any differences in the distribution of each question item across the categorical variables. When no differences were found by the results of Chi-square test method, the Phi and Lambda coefficients test was also employed.

Question set 3: *In what ways are faculty involved in blended instruction? (a) Are faculty involved in developing, designing, and maintaining online instructional components? (b) What are faculty attitudes toward and perceptions of blended instruction? (c) How do institutions support faculty involved in blended instruction?*

Survey questions 9, 10, 11, 19 (a,b,c,d) (B) focused on how faculty were involved in developing, designing, and maintaining online instructional components in blended instruction. In order to answer research question 2(a) (*Are faculty involved in developing, designing, and maintaining online instructional components?*), responses to these survey questions were used. The Chi-square test was used to determine the dominant processes that faculty was involved in.

The survey section focusing on faculty attitudes and perceptions (Q19 (e-j) (B) and Q2 (A)) were designed to identify faculty attitudes and perceptions regarding instructional delivery methods. In order to answer research question 2(b) (*What are faculty attitudes toward and perceptions of blended instruction?*), responses to these questions are presented in this document (1 being lowest and 6 being highest) and discussed descriptively based on the results.

Survey questions Q 10, 12, 13, 14 (a-g) (A) addressed institutional support for faculty in designing instruction with online components. Responses to these questions are presented in this report descriptively with tables. When testing the reliability of the responses in SPSS, reliability of the responses to the group of questions about the

instructional delivery methods was 0.81 (81%), and the group of questions regarding faculty attitudes and perceptions of instructional delivery methods yielded a reliability coefficient of 0.61 (61%). Internal consistency of the revised survey instrument was higher than the internal consistency of the survey used in the pilot study.

Summary

The study consisted of two phases, a pilot phase and a larger scale data collection phase. The pilot study was designed to test the instruments to determine if the survey questions were generating required information and if the information collected could be analyzed to provide appropriate responses to the research questions. Based on the information collected in the pilot phase, the survey instruments were revised for use in the second phase of study. The sample for the second phase of study consisted of faculty and IHE representatives of the 151 extensive doctoral research universities as classified by the Carnegie Foundation. The target population of this study consisted of faculty members who were actively engaged in online instruction and IHE representatives who were involved in assisting faculty in delivering online instruction. Of the total target population, 33 IHE representatives and 133 faculty became participants in this study. They provided information regarding their perceptions of and practices in blended instruction.

CHAPTER IV

FINDINGS

This chapter presents the findings of this study. Overall, this chapter is divided into two sections; demographic information and data analysis. The survey responses were grouped in three categories based on the research questions of study; (1) definition of blended instruction; (2) current practices in blended instruction; and (3) institutional support for blended instruction. The findings are descriptively presented in tables and figures.

Demographic Information

Demographic Information for Group A (IHE representatives)

Of the total 151 persons in the targeted population, 34 IHE representatives returned the survey instruments, and 2 IHE representatives reported that they would not participate in the study since their universities did not have any online instructional components in their programs. The 151 targeted universities included 109 public universities and 42 private universities. Representatives of 28 public universities (28 of 109) returned completed surveys for a return rate of 25 percent. Five private university representatives (11%) returned surveys. The overall response rate was 22%, and the response rate of public universities was more than two (2) times higher than the case of private universities. Respondents in group A varied in titles, roles, and responsibilities in their respective universities, and in the focus of their activities. Categorizing the respondents by position, there were 18 (52.9%) directors/coordinators, 3 (three) (8.8%)

Table 2. Participants in Group A by Position and University Type

Position	University Type				Total	
	Public		Private		Frequency	Percent
	Frequency	Percent	Frequency	Percent		
Director, Coordinator	17	51.45%	1	2.85%	18	54.3%
Assistant director	2	5.75%	1	2.85%	3	8.6%
Instructional specialist/ Media specialist	9	25.7%	4	11.4%	13	37.1%
Total	28	82.9%	6	17.1%	34	100%

N=34

assistant directors, and 13 (38.2%) instructional specialists/media specialists. Detailed information regarding the participants is presented in *Table 2*.

Although the respondents' positions were different in each university, the sampling procedure assured that the respondents represented the group of people who were actively engaged in assisting faculty in developing online instructional components. Examining university type, participants' positions, and the geographical distribution of universities, the participating group well represented higher education institutions. However, the relatively low return rate suggests that results cannot be generalized beyond the participating universities. A list of organizations is available in appendix A.

Demographic Information for Group B (Faculty participants)

Of the total 1000 faculty in the targeted population, 133 faculty members from 30 different universities participated in this study, and 17 faculty members from 17 different universities reported via email that they could not participate in the study because (1) they were not involved in any form of online instruction (13 faculty); (2) they were not

Table 3. Demographic Information for Group B by University Type

University Type	University		Faculty	
	Frequency	Percent	Frequency	Percent
Public	22	73%	107	80.5%
Private	8	27%	26	19.5%
Total	30	100%	133	100.0%

N= 133

familiar with the terminology “blended instruction” (2 faculty); and (3) they perceived that the survey instrument did not provide enough information that represented their practices in depth (2 faculty).

Of the total 133 faculty respondents, 107 respondents (80.5%) were from 22 public universities, and 26 faculty respondents (19.5%) were from eight private universities (see *Table 3*). As in the case of group A, more faculty members in the public universities participated in this study than faculty in the private universities did. *Table 3* provides participant data by university type.

When analyzing the participants’ demographic information by gender and position, the returned surveys represented every academic rank and both genders; however, comparing the number of responses, more assistant and full professors than associate professors returned the survey instrument (see *Table 4*). Of the total 133 respondents, three (3) respondents did not reveal their gender and rank on the returned survey instruments, but they provided university names and their email addresses. Of the total 130 group B respondents, 66 (50.7%) were male, and 64 (49.3%) were female; 48 (36.8%) were assistant professors; 29 (22.3%) were associate professors; 36 (35.5%) were full professors, and seven (5.4%) were adjunct professors. Of the 48

Table 4. Demographic Information for Group B Participants by Gender and Rank

Rank	Gender				Total	
	Male		Female		Frequency	Percent
	Frequency	Percent	Frequency	Percent		
Assistant professor	20	15.3%	28	21.5%	48	36.8%
Associate professor	16	12.3%	13	10.0%	29	22.3%
Full professor	29	22.3%	17	13.2%	36	35.5%
Adjunct professor	1	0.8%	6	4.6%	7	5.4%
Total	66	50.7%	64	49.3%	130	100%

N=130 *There are three missing data in gender and rank.

assistant professors, 20 (15.3%) respondents were male, and 28 (21.5%) were female. Of the 29 associate professors, 16 (12.3%) were male, and 13 (10.0%) were female. Of the 36 professors, 29 (22.3%) were male, and 17 (13.2%) were female; and of the seven adjunct professors, one (0.8%) was male, and six (4.6%) were female (see *Table 4*).

Even though the participants well represented different perspectives from a variety of universities, the findings and conclusions of this study will have to be limited to the participating universities and departments, since only a small number of email survey recipients participated in this study.

Data Analysis

The number of responses to each survey question was different because some participants did not respond to certain questions.

Definitions of Blended Instruction

Research Questions 1. How do faculty and institutional representatives define blended instruction?

In order to examine how blended instruction is currently being defined, question 6 (A) and question 12 (B) asked for the participants' own definitions of blended instruction. Responses to these questions were analyzed with a content analysis method in SPSS Text Analysis version 13. The data were entered into the program in order to identify high frequency words and categorize them by theme; the application generated information about the high frequency words and phrases [those repeated].

Of the 34 IHE representatives in Group A, 32 provided definitions of blended instruction. Of the 133 faculty respondents in group B, 89 faculty members provided their own definitions of blended instruction that matched the definition selected by the researcher; one (1) IHE representative in group A did not provide any definition, and 44 faculty members in group B did not provide a definition or provided different definitions; of those 44, six (6) faculty provided different definitions; eight (8) faculty respondents reported non-recognition of the terminology; and 30 faculty respondents did not answer the question. Examples of the responses that did not match the given definition are as follows:

- Incorporating technology into coursework
- Instruction using a variety of methods, not just lecturing to a room of students.
- The use of both traditional methods of instruction (face-to-face lecture, discussion, group project) with techniques that integrate technology in some way.
- Combining traditional teaching methods with new technology driven methods

- Teacher education programs combining internship and methods courses are called blended programs. (This sentence was rephrased from the original sentence.)
- A mix of media

In addition, some faculty members reported that even though they have been delivering their courses in a blended method, they did not recognize the terminology that was used for the delivery method. In total, 121 respondents, including 32 IHE representatives and 89 faculty members provided their own definitions of blended instruction that matched the given definition. The definitions of blended instruction that were provided by those 121 respondents contained words “online instruction”, “classroom instruction”, and “combination”, however, none of the definitions contained the proportion of each component. Overall, the definitions included a combination of instructional methods and media. Examples of definitions included in the 121 responses are as follows;

- We define it as instruction that combines classroom and online instruction.
- Combination of online and face-to-face instruction; also, blending of traditional and progressive pedagogies
- Use of online and offline materials and activities
- The marriage of technology components with face to face instruction to enhance lessons yet continue to utilize effective teaching strategies
- Using many methods of presenting information to students, including in class and Internet techniques
- A course that combines traditional face to face course delivery with some other non-traditional instructional methods

- I am unfamiliar with the term, but it seems fairly intuitive. It connotes a mix of traditional classroom and face-to-face instruction with computer-based instructional methods.

(Extracts from 121 responses)

As described above, blended instruction is generally defined and practiced as a combination or mixture or incorporation of delivery formats with technology-based instructional tools, regardless of the proportions of instructional components. Within this format, according to the instructor’s approach and the nature of course, blended instruction may aim for using different teaching strategies and pedagogies, or integrating technology based instructional tools. *Figure 4* below depicts visual information about the descriptors used and cross relationships among these descriptors that have been used to describe blended instruction in the responses of the participants.

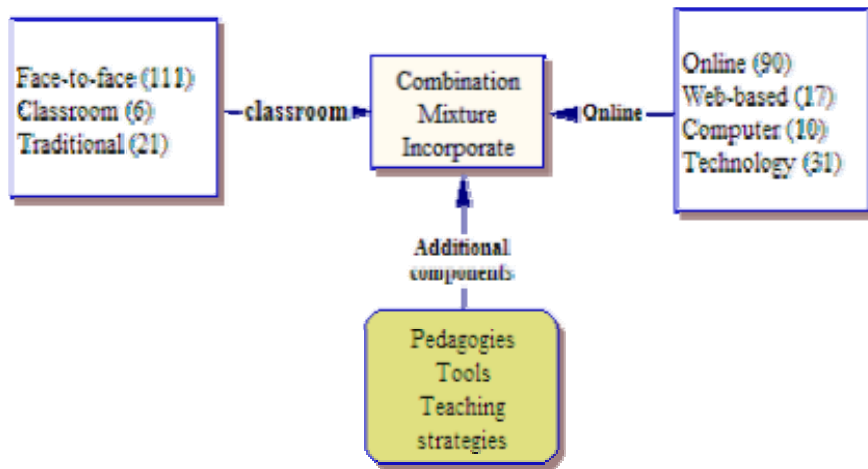


Figure 4. Representation of Blended Instruction as Described by Respondents

* “Face to face”, “classroom” and “traditional instruction” are categorized as “classroom” instruction and “online”, “web”, “computer”, and “technology-based instruction” were categorized as “online instruction”. The numbers in the prentices represent the number of times the terminology appeared in the respondents’ answers.

Summary

Of the 33 IHE respondents (group A), 32 respondents defined blended instruction as a combination of online and classroom instruction. Of the 133 faculty, 89 faculty members provided definitions that included online and classroom instructional components while six (6) respondents provided definitions that included a combination of media in classroom instruction or different media. In summary, 72% of all participants defined blended instruction as a combination of online and classroom instruction, sometimes including a combination of different delivery methods in that a variety of teaching strategies, technology tools, and applications are integrated together within the format.

Current Practices in Blended Instruction

Research Question set 2: How is blended instruction currently being practiced?

- (a) *What types of instructional delivery methods, technologies, instructional components, and assessment methods are currently being used?*

In order to find out how blended instruction is currently being practiced in higher education institutions, responses to the survey questions Q1,3,4,5,9 (group A) and Q1,5,6,7,8 (group B) were analyzed based on the categories used in the research question.

(1) Instructional Delivery Methods

Responses to the question Q1 (A) (Which of the following course delivery systems are currently being used in your university ?) and Q1 (B) (I currently teach one or more courses in the following formats) were analyzed to find out what types of instructional delivery methods are currently being used in the participating universities. Seven (7) instructional delivery methods were provided in question Q1 (A) as examples so that the

respondents could choose the methods that were available in their universities; the instructional methods included (1) completely asynchronous online instruction; (2) completely synchronous online instruction; (3) combination of synchronous and asynchronous online instruction; (4) combination of more than 50% online instruction combined with classroom instruction; (5) combination of less than 50% online instruction combined with classroom instruction; (6) classroom instruction with online supplementary materials; and (7) classroom instruction only. A text box was also given so that respondents could provide extra information as needed.

When analyzing the data responding to Q1(A), 33 of the 34 IHE representatives marked availability of face-to-face instruction with online supplementary materials. This delivery format appeared to be the most commonly available instructional method in the surveyed universities. Among of the 33 responding universities, completely asynchronous online courses were available in 28 universities (82.4%); completely synchronous online courses were available in 11 universities (32.4%); combination of synchronous and asynchronous online instruction was available in 26 universities (76.5%); a combination of more than 50% online and classroom instruction was available in 27 universities (79.4%); a combination of less than 50% online and classroom instruction was available in 27 universities (79.4%); classroom instruction with online supplementary materials was available in 31 universities (91.2%); and classroom instruction only was available in 29 universities (85.3%). *Figure 5* depicts these patterns.

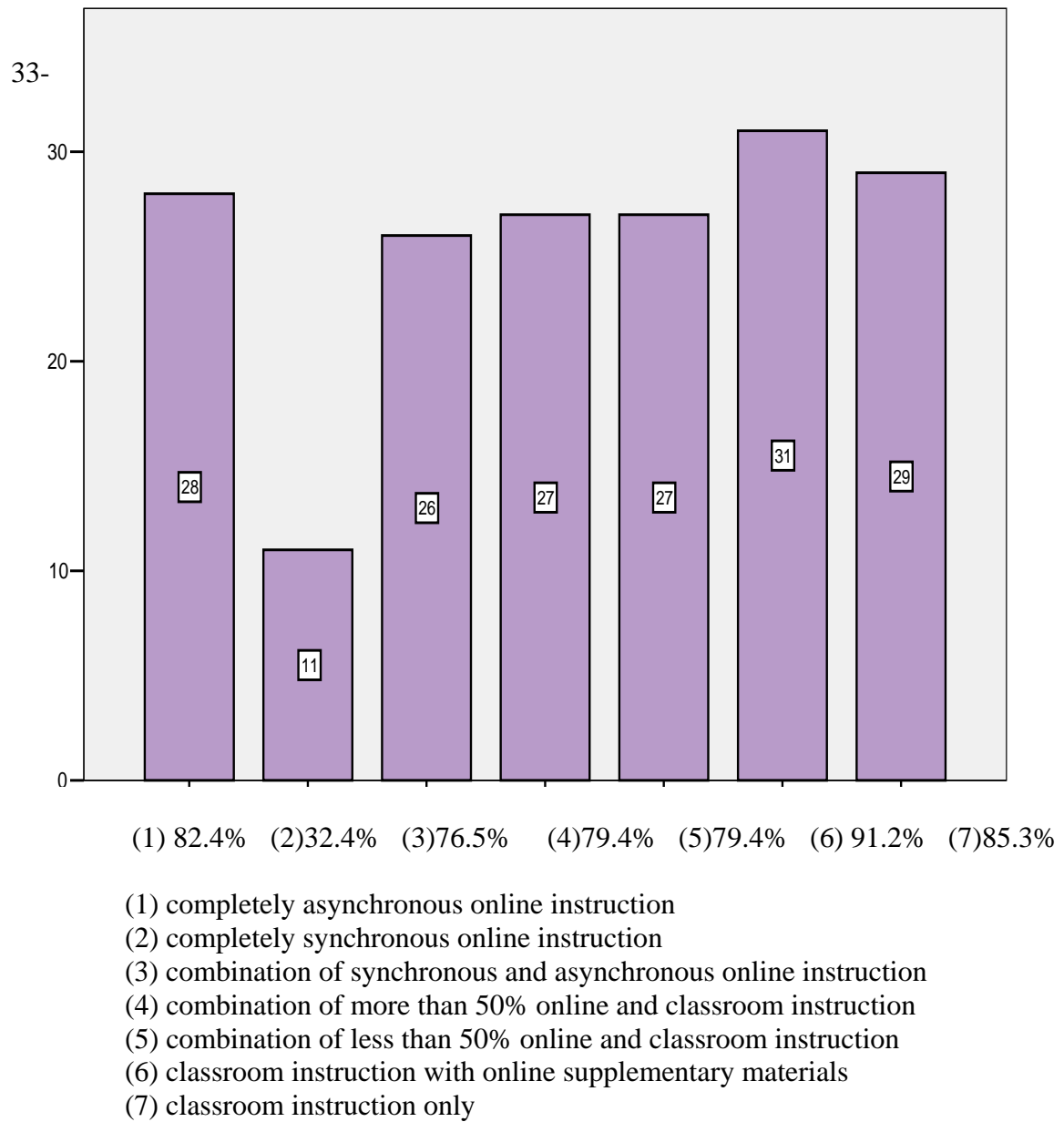
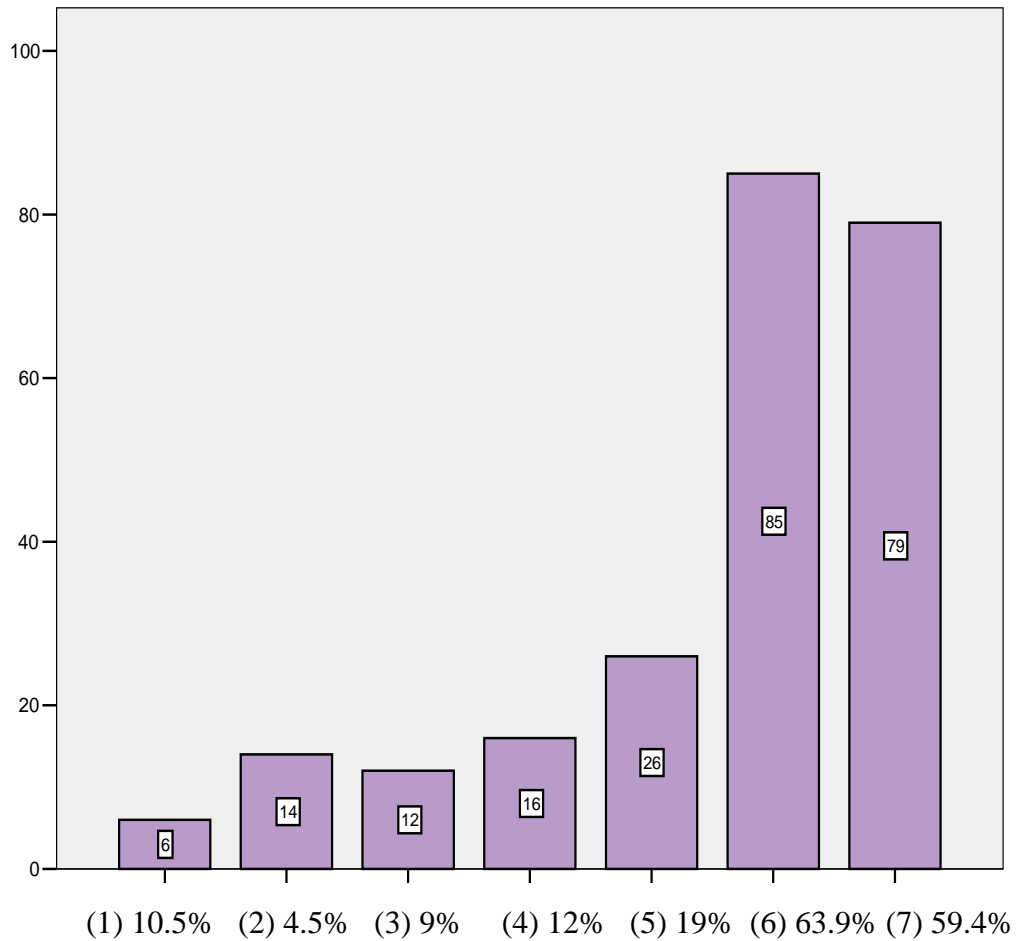


Figure 5. Instructional Delivery Formats Available in 33 Responding Universities as Reported by University Representatives

Nine (9) universities (27%) reported that all the seven (7) instructional delivery methods were available; eight universities (24%) reported that six (6) instructional methods were available; seven (7) universities (21%) reported that five (5) methods were available; six (6) universities (18%) reported that four (4) methods were available; two (2) universities (6%) reported that three (3) methods were available, and one (1) university (3%) reported that only one (1) method “classroom instruction only” was available in the university. Overall, most universities (90%) appeared to adopt various instructional strategies by employing more than four (4) instructional delivery methods. Appendix D includes detailed information regarding the number of instructional delivery formats available in the universities. When examining the data by university type, private and public, there was not any substantive difference found in the availability of different instructional formats.

When examining the responses of group B (faculty) to question Q1 (B) asking about the courses that they have taught or currently teach, the most commonly selected instructional delivery method used by faculty was “face-face-to instruction with supplementary online instructional components (64.4%) as was the case in group A. The second most commonly selected method was face-to-face instruction only (59.8%), and a combination of classroom instruction with online instruction (31.8%) was ranked third. Other instructional delivery methods, such as completely synchronous or asynchronous online were also reported to be used, however, a relatively small number of faculty reported use of these formats. *Figure 6* presents a visual representation of responses.



- (1) completely asynchronous online instruction
- (2) completely synchronous online instruction
- (3) combination of synchronous and asynchronous online instruction
- (4) combination of more than 50% online and classroom instruction
- (5) combination of less than 50% online and classroom instruction
- (6) classroom instruction with online supplementary materials
- (7) classroom instruction only

Figure 6. Instructional Delivery Formats Delivered by the Faculty as Reported by Faculty

Table 5 provides a detailed summary of responses to the question about delivery formats from both groups A and B. As presented, most of the participating universities make use of an instructional format that combines classroom and online instruction. Within that format, the most popular method of delivery as identified by both university representatives and faculty is “face-to-face instruction with supplementary online instructional components”. Formats (c) or (d) in *Table 5* are those closest to the definition of blended instruction provided by the researcher. However, it was not clear which format was perceived to be blended instruction by the faculty, since the formats marked by them in Question 1 did not address the definitional issue. Within the format that the participants perceived as blended instruction, a number of variations in practices were reported by the faculty participants; practices in blended instruction varied depending on the nature of courses and university policies. Following are some of the comments that were provided by the faculty respondents;

- We use face-to-face instruction with supplementary online instructional components. We are training teachers, who will work face to face with their students. It is essential that we serve as models for our students; thus, face to face instruction is considered necessary.
- I teach a course on statistics that is linked to a concurrent course in comparative politics. The lessons in stats class use the substance of comparative politics class, and the comparative politics class uses statistics (first graphs, later regression) as they are taught in stats. The comparative class is about half on-line instruction; the stats class uses computers for in-class instruction and the web for many home works.
- Although seminars and methods classes use online supplemental material, it is mostly assignments, either explained online or required to be submitted on line. On the other hand, when I have taught our technology class, about 90% was online. Yes, it depends on the course. Like I said above, my graduate seminar class is largely online. My other classes are mainly online supplements

Table 5. Frequency Table of Course Delivery Formats as Reported by Faculty and University Representatives

Instructional delivery format	Faculty (n=132) (Course formats that I currently use)		IHE representatives (n=33) (Course delivery formats that are currently being used)	
	Frequency	Percent	Frequency	Percent
(a) Face-to-face instruction with supplementary online instructional components	85	64.4%	31	93.9%
(b) Face-to-face instruction only	79	59.8%	27	87.9%
(c) Instruction in which less than 50% of the instruction is delivered online with the remainder being face-to-face instruction	26	19.7%	27	81.8%
(d) Instruction in which more than 50% of the instruction is delivered online with the remainder being face to face-to-face instruction	16	12.1%	27	81.8%
(e) Completely asynchronous online Instruction	14	10.5%	28	82.4%
(f) Combination of synchronous and asynchronous online instruction	12	9.1%	26	78.8%
(g) Completely synchronous online Instruction	6	4.5%	18	33.3%

*Q 1 (A) - Which of the following course delivery systems are currently being used in your university?

* Q1(B) Faculty - I currently teach one or more courses in the following formats.

- One course was entirely on-line, but all participants were also enrolled in a course that was about 40% on-line; other courses were 80% face-to-face/20% on-line; another course used on-line instruction ONLY for make-up
- Course requirements include in class activities as well as on line activities. Students are expected to participate in on line work and communication.
- Hybrid courses at the University combine traditional classroom instruction with a significant amount (over 50%) of instruction delivered through educational technology. Hybrid courses meet approximately half of the time in a traditional face-to-face classroom environment with the remainder of the course presentation, interaction, activities and exercises delivered through various electronic means (online, WebCT, and/or video formats). Although the seat time requirements are less than a traditional class, students may expect to spend at least as much time engaged in course activities as in a traditional class.

(Extracts from the responses)

When comparing the instructional delivery methods marked by respondents by university type, faculty rank, age, and gender, there were no substantive differences found in the selection of instructional delivery format.

Summary

In summary, more than four (4) kinds of instructional formats were reported to be used in 90% of the participating universities. The most common instructional delivery format that was used by the surveyed universities and faculty was classroom instruction using online instructional components as supplementary materials. Within the instructional formats, variations were revealed in practice, depending on the nature of the courses, institutional policy, and classroom situations. There was no difference found in the practices according to variables such as university type and faculty rank, age, or gender.

(2) Technologies in Blended Instruction:

In order to identify the technology tools that are currently being used for blended course delivery, responses to question Q7 (B) (What tools and activities do you typically use in the online components of your instruction?) and Q8 (B) (What tools and activities do you typically use in the face-to-face components of your instruction?) were analyzed, particularly, responses about instructional tools were used to answer the question.

Based on the analysis of instructional tools used in online instruction, management systems (CMS), presentation tools, and email were the most commonly used technology tools incorporated into online instruction; (a) 75.6% of the faculty respondents reported to use CMS; (b) 57.8% of the faculty respondents reported using online resources and multimedia presentation tools such as PowerPoint ; and (c) 91.4% faculty respondents reported use of email to communicate with students. However, high-end technologies such as streaming videos or audios and synchronous communications tools were less frequently incorporated into online instruction (13.3%) (see Table 6, p 81).

Regarding the kinds of course management systems, BlackBoard (49.2%) and WebCT (28.7%) were the most frequently employed course management systems, and a relatively high number of faculty reported using personal websites (30.1%) for their online course delivery. A few faculty reported use of different course management systems such as Angela and Centra. Within the course management systems, features such as online grade books (46.1%) and asynchronous discussion forums (31.3%) were more regularly used than synchronous discussion forums (12.5%).

Table 6. Technology Tools Used in Blended Courses as Reported by Faculty

Online Instructional Tool	Frequency	Percent	Classroom Tool	Frequency	Percent
Email	117	91.4%	Multimedia presentation materials	95	72.5%
Online course management systems	96	75.0%	TV/video tapes	81	62.8%
Online resources (web resources)	87	68%	CD-Rom based instructional materials	37	28.2%
Multimedia presentation applications (PowerPoint)	74	57.8%	Listserv	22	16.8%
Online grade books	59	46.1%	Electronic white board	17	13.1%
Listserv	50	39.1%	I do not use technology in my classroom.	14	10.7%
Asynchronous discussion forums	40	31.3%			
Streaming videos	28	21.9%			
Streaming audios	17	13.3%			
Synchronous conferencing tools	16	12.5%			
Electronic white board	11	8.6%			
Learning object libraries	1	0.8%			

N=128

* Q7 (B) What tools and activities do you typically use in the online components of your instruction?

* Q8 (B) What tools and activities do you typically use in the face-to-face components of your instruction?

For classroom instructional tools, multimedia presentation materials using PowerPoint (72.5%) were reported to be commonly incorporated into classroom instruction and online instruction. In addition, TV and video tapes (62.8%) were also widely integrated into the curriculum as popular classroom instructional media. While most faculty reported use of technology in their instruction in some way, 14 faculty (10.7%) reported that they never used technologies in their classroom at all. Detailed information regarding the use of technologies in online and classroom courses is presented in *Table 6*.

When comparing the data by variables such as university type, faculty position, and faculty teaching experiences using an Independent Sample T-Test, there was not any significant difference in the use of online technology in different types of universities or faculty of difference ranks and levels of experience ($p>0.05$).

Summary

Most faculty and university representatives reported using online course management systems such as Blackboard and WebCT for their online course delivery. Personal websites were also commonly adopted to manage online instructional components. In addition, multimedia presentation applications (e.g. PowerPoint) were the most frequently adopted technology tools for both online and classroom instruction. Communication tools such as email, listserv, and asynchronous discussion forums were commonly used in both online and classroom instruction. Synchronous tools and applications that require high technology skills to develop (e.g. streaming video, audio, learning objects) were less frequently used in both online and classroom instruction. In

classroom instruction, instructional media such as TV and Video were still commonly used in the curriculum.

(3) Instructional Activities in Blended Instruction

In order to identify instructional components that are currently being used in blended instruction, responses to Q7 (B) and Q8 (B) were analyzed. According to the data presented in *Table 6* (p. 81) and *Table 7* (p.84), most respondents post course syllabi, schedules, instructional materials (71.7%), announcements, and assignments online (68.8%) to the course Website in CMS or personal websites so that the students can reach them at any time. In online learning environments, the faculty adopted activities such as online discussions (61.7%) and assigned individual work (57.0%) and group work (49.7%) that could be handled online, while lecture (37.5%), students' presentations (36.7%) and assessments (26%) (e.g. quiz or test) were less frequently adopted as online instructional activities. Interestingly, self-paced learning modules (20.3%) were not applied as online instructional components even though the literature emphasizes the use of self-paced learning modules as an important instructional element.

For classroom activities, discussion (89.3%), lecture (87.7%), and student presentation (77.9%) were the most regularly used instructional components and student assessments (e.g. quiz, test) (53.4%) often occurred during the class as well. More than half of the respondents reported adopting course management systems to upload course syllabi and materials online for their classroom instruction; it appears that the online course site is used as a placement board for these materials. Detailed information regarding the instructional components in online and classroom instruction are presented in *Table 7*.

Table 7. Instructional Components in Online and Classroom Instruction as Reported by Faculty

Online Activities	Frequency	Percent	Classroom Activities	Frequency	Percent
Course management by uploading course syllabus, schedule, and instructional materials online	91	71.1%	Discussion	117	69.3%
Course management by posting assignments and announcement online	88	68.8%	Lecture	114	87.7%
Discussion	79	61.7%	Student presentations	102	77.9%
Individual work	73	57.0%	Group Work	95	72.5%
Group work	63	49.6%	Individual work	82	63.6%
Lecture	48	37.5%	Course management by posting assignments and announcement online	79	60.8%
Student presentations	47	36.7%	Course management by uploading course syllabus, schedules, and instructional materials online	75	57.3%
Test/assessment	34	26.6%	Test/assessment	70	53.4%
Simulations	33	25.8%	Guest speaker	68	52.3%
Self-paced learning modules	26	20.3%	Simulations	54	41.2%
Online review sessions (items)	15	11.0%	Review sessions	48	36.6%
Online practice sessions (items)	13	10.2%	Consultation sessions/office hours	32	24.4%
Consultation sessions/virtual office hours	1	0.8%	Practice session	22	16.8%
			Field trip	19	14.7%
			(i) Self-paced learning modules	15	11.5%

N=128

* Q7 (B) What tools and activities do you typically use in the online components of your instruction?

* Q8 (B) What tools and activities do you typically use in the face-to-face components of your instruction?

Summary

In both online and classroom instruction, “discussion” was the most common instructional activity, and in both instructional formats course management systems were frequently used for placing course materials, announcements and assignments. In classroom instruction, lecture and students’ presentations took place during class periods as major instructional activities, while discussion and group/individual work were often delivered online.

(4) Evaluation Methods Used in Blended Instruction

In order to examine whether there is an appropriate evaluation method available for blended instruction, question 9 (A) (*Are appropriate instruments available to students and instructors for evaluating blended courses?*) was analyzed. According to the data (*Table 8*, p.85), course evaluation procedures for blended instruction in the participating universities were not appropriately developed and were not available for the use of faculty and students in most of the participating universities; evaluation formats/instruments were available in only seven (7) universities (21.2%) of the total 34 universities surveyed. Evaluation forms for students and instructors were available in six (6) universities, and forms for instructors were available in two universities. Eleven (11) university representatives reported that they were not sure about the evaluation methods used by faculty (see *Table 8*). There was no significant difference found in the use of evaluation methods for blended instruction by university type, when analyzing the data with a T-test, ($p>0.05$). Since blended instruction is a fairly new concept and not adopted broadly as a format for instruction in many universities, appropriate course evaluation forms and procedures did not seem to be available, or else many university staff are not

Table 8. Assessment of Blended Instruction as Reported by University Representatives

Item	Frequency	Percent
(a) Forms available for both students and instructor	7	21.2%
(b) Forms available for students only	6	18.2%
(c) Forms available for instructors only	2	6.1%
(d) No forms available	7	21.2%
(e) Not sure	11	33.3%
Total	33	100.0%

*Q9: Are appropriate instruments available to students and instructors for evaluating blended courses?

familiar with the evaluation instruments available in their universities.

Summary

A blended instructional method that combines online and classroom instructional components is used in many of the participating universities, yet knowledge about appropriate evaluation procedures or instruments was minimal in most of the surveyed universities.

Research Question set 2: How is blended instruction currently being practiced?

(b) Why, how, and to what extent is blended instruction being used in the higher education institutions?

This section addressed the issue of reasons for using blended instruction, examined the composition of blended instruction, and discussed the extent to which blended instruction has been adopted in higher education institutions.

(1) The Reasons Why Faculty Choose to Deliver Blended Instruction

To find out the reason why the blended instructional method is being used in higher education institutions, responses to Q13 (B) (*What are the main reasons that you teach blended courses?*) were analyzed. According to the data (see Table 9, p.87), the most common reasons for using blended instruction were;

Table 9. Reasons of Adopting a Blended Instructional Format as Reported by Faculty Respondents

Item	Frequency (N=100)	Percentage
To improve course quality	73	73%
To Include best features of both online and classroom instruction	68	68%
Blended learning environments provide students with more flexibility and options in learning activities than online instruction alone.	63	63%
To increase student learning outcomes	61	61%
It is more effective than classroom instruction alone.	61	61%
To accommodate students with diverse learning styles	60	60%
It is more convenient for me to teach courses in a blended method since I can better manage my courses and my time.	59	59%
To increase interaction with students and student engagement	57	57%
Blended classes are more beneficial for students.	51	51%
It is more effective than online instruction alone.	49	49%
To cover topics that can not be covered in online learning environments	28	28%
To keep up with current trends in higher education	27	27%
To overcome limitations that I experienced from online instruction	24	24%
I feel pressure from my university to participate in blended instruction.	14	14%

*Q13 (B): What are the main reasons that you teach blended courses?

*Q15 (B): If you used/use the blended instructional method, which of the following apply your experience with it? (N=90)

- (1) To improve course quality by employing the blended instructional format for their course delivery.
- (2) To provide students with more flexibility and options in order to enhance student learning outcomes.
- (3) To better accommodate students with diverse needs and learning styles.
- (4) To include best features of both online and classroom instruction.
- (5) Because faculty can better manage their courses and time in a blended format than they did in classroom instruction only.
- (6) Because it is more effective than online instruction alone.
- (7) Because it is more effective than classroom instruction alone.

The reasons least often mentioned by faculty participants were;

- (1) To keep up with current trends in higher education.
- (2) Because he/she feels pressure from his/her university to participate in blended instruction.
- (3) To cover topics that can not be covered in online learning environments.
- (4) To overcome limitations that he/she experienced from online instruction.

Detailed information is presented in *Table 9*. Based on the comments by the faculty who had experience with blended instruction, this group often preferred the format since it provides students and faculty with convenience, flexibility, active engagement, efficiency in using resource materials, and a feeling of connection between/among students and instructor.

According to one of the comments by a faculty member, blended instruction is beneficial in three different ways; instructors, students, and instruction. For instructors, (1) blended instruction provides numerous tools to utilize in the instruction process and for students; (2) it is easier for instructors to administrate their courses, since better course building opportunities are provided; (3) instructors do not have to teach students everything, since the students are more responsible for their learning; and (4) instructors can provide a better course with less effort.

Benefits to students were seen by this respondent as (1) convenient access to course material and course calendar to identify topics covered and when they are to be covered; (2) learning environments for better learning outcomes, better skill development, and ability to repeat the experience; (3) opportunities to keep up with the course when they are sick or have other face-to-face meeting conflicts; and (4) different learning methods.

Benefits to the institutional process were perceived by this respondent to be (1) availability of more authentic experience; (2) availability of much more diverse curricular materials; and (3) an instructional format that meets both remediation and enhancement needs of students. Following is one of the faculty comments that best illustrates the advantages and practices in blended instruction.

“Contrasted to Web-enhanced or Web-supplemented courses where the center of learning is consistently oral interaction; instead blended instruction uses the strengths of face-to-face and the strengths of online (many participating at once; time for reflection; encouraging shy students to speak; retaining a record of interactions; using “conversation” rather than “discussion”; centering on student; etc., and thus is bi-modal and strengthens the social bonds of the evolving group usually called a "class." The online part is not window-dressing but provides a second, very different, venue for teaching and learning.”

Summary

Blended instruction has been adopted by many of the participating universities, since faculty could improve the quality of their instruction by adopting the best features from online and classroom instruction. In a blended format, faculty can reduce their time and effort in explaining items such as class schedules and assignments, and handling administrative work (i.e. class roll, grading) by adopting online instructional tools. For students, the instructional format provides them with flexibility and capability to review course materials that they could not understand in class or the materials they missed due to their absences. Overall, most of faculty respondents agreed that a blended instructional format is more effective than online or classroom instruction alone.

(2) How to Blend Instruction

In order to examine the composition of blended instruction, responses to two questions Q4 (B) (*How much of the instruction in the courses noted above is face-to-face?*) and Q2 (A) (*If faculty in your university offer instruction that combines online and classroom instruction, what percentage of the instruction in this method do you estimate to be face-to-face?*) were analyzed. Responses to the two questions are presented together to better explain available instructional delivery methods in the universities and the most common instructional format that is employed by faculty. The questions (Q4 (B), Q 2(A)) were based on a definition of blended instruction as a combination of online and classroom instruction.

Table 10. The Proportion of Face-to-Face Instruction in Blended Instruction as Reported

Face-to-face instruction	Faculty (Q4:B)		Organizational Respondents (Q2:A)	
	Frequency	Percent	Frequency	Percent
Less than 5%	3	2.5%	2	6.3%
5% - 15%	7	5.9%	1	3.1%
16% - 30%	4	3.4%	1	3.1%
31% - 40%	1	.8%	1	3.1%
41% - 50%	3	2.5%	2	6.3%
51% - 60%	8	6.7%	2	6.3%
More than 60%	79	66.4%	18	56.3%
It depends on the courses.	14	11.8%	5	15.6%
Total	119	100%	32	100%

* Q4 (B): How much of the instruction in the courses is face-to-face?

* Q2 (A): If faculty in your university offer instruction that combines online and classroom instruction, what percent of the instruction with this method do you estimate to be face-to-face?

The responses to both questions 4(B) and 2(A) indicated that the most common format for blended instruction is more than 60% of instruction delivered in the classroom, while the rest of the instruction is delivered online. Within this format, the emphasis was classroom delivery with online instructional components adopted as supplementary to classroom sessions, rather than being full class sessions. Even though the concept of blended instruction originated from online instruction; in practice, online instructional components are used to strengthen classroom instruction. According to the information presented in *Table 10*, fewer than 30% of the responding faculty employed blended instruction with an emphasis of online instruction.

According to the information presented in *Table 10*, more than 60% of blended instruction in the participating universities is classroom instruction. However, based on comments provided by faculty, the proportion of classroom and online instruction differed by the characteristics of the course and the situations that both instructors and

students might have. There is more than one answer for this questions as reported in response to research question 1 on page 73; (1) combination of more than 50% online instruction combined with classroom instruction, (2) combination of less then 50% online instruction combined with classroom instruction, and (3) classroom instruction with online supplementary materials.

Respondents even expressed that their responses to these questions (4(B) and 2(A)) might not represent practices correctly, since the questions were not appropriately designed to explain their practices. For example, an instructor could teach three courses with different portions of each instructional component or teach the same course in different ways at difference times based on their needs. Thus, the proportion of classroom and online instruction may vary. Examples of additional information provided in the comment boxes included the following;

1. It varies tremendously. We have some faculty who have only one or two face to face meetings, where are some who meet 50% online, and we have some whose instruction online is only about 10% (staff).
2. It depends on the course. Although seminars and methods classes use online supplemental materials, it is mostly assignments, either explained online or required to be submitted online. On the other hand, when I have taught our technology class, about 90% was online (faculty).
3. The content (material) and the learners determine the instructional method. There is no one size that fits all, thus I vary to meet those needs (faculty).
4. During the summer sessions we have more "face time" due to required on-campus seminars (faculty).
5. I do not believe that ANY of the answers above are correct, since it all depends on the particular blended instruction approach and particular instructor (faculty).
6. Students sign up for either classroom or online, so, during the class time some students are in the classroom, and others are online synchronously (faculty).

As shown above, the proportion of instructional components in blended instruction might vary based on the instructional situation; however, the predominant

format for blended instruction was reported to be the combination of more than 50% classroom instruction and the remainder online instruction.

Summary

The concept of blended instruction originated from the attempt to improve online learning environments by combining online and classroom instructional components. In practice, however, the blended instructional method in the participating universities was being used to add some online components to classroom instruction. The most common format for blended instruction in the universities surveyed was 60 percent or more classroom instruction with the remainder being online instruction. Online instruction was often supplementary materials or activities rather than full instruction. Many respondents agreed that the proportion of each instructional component might differ depending on the characteristics of the course and the situations that both instructors and students might have.

(3) The Extent to Which Blended Instruction is Employed in the Higher Education Institutions

In order to examine the extent to which blended instruction has been adopted in the participating higher education institutions, Q3 (B) (*If you currently use some form of instruction that combines online and classroom instruction, how many courses do you currently teach or have you previously taught with this method?*) was analyzed. Of the 133 participants, 128 faculty responded to this question; 111 (77.7%) participants had experience with blended instruction in the way defined in this study, and 17 faculty (13.3%) did not have any experience with the instructional format.

Table 11. The Number of Blended Courses Taught As Reported by Faculty Respondents

Item	Frequency	Percent	Blended instruction
None	17	13.3%	
1-2 courses	43	33.6%	
3-5 courses	30	23.4%	
6-8 courses	13	10.2%	111(77.7%)
More than 9 courses	25	19.5%	
Total	128	100.0%	

* Q3 for faculty: If you currently use some form of instruction that combines online and classroom instruction, how many courses do you currently teach or have you previously taught with this method?

According to the respondents (see *Table 11*), 111 (77.7%) of them reported delivery of instruction in a blended method. Forty three (43) respondents (33.6%) had delivered 1-2 courses, 30 respondents (23.4%) had delivered 3-5 courses, 13 respondents (10.2%) had delivered 6-8 courses, and 25 respondents (19.5%) had delivered more than 9 courses in a blended method. A majority of faculty respondents had experience in teaching blended course(s) in a combined format of classroom and online instruction.

Table 11 summarizes the information about the number of courses taught.

Summary

Some format of blended instruction appeared to be a common instructional format in the participating higher education institutions. Of the total 128 faculty respondents, 111 faculty reported experience with the format.

Research Question set 2: How is blended instruction currently being practiced?

The section addresses different practices in blended instruction based on types of university and characteristics of instructors.

(c) Are instructional practices different based on institutional characteristics such as types of institution, discipline areas, and/or characteristics of instructors such as age, gender, experience, and rank?

To answer this question, the findings from research Q1 (B), 3(B), and 4(B) were analyzed by the characteristics of institutions and instructors using The Chi Square test and the Lamda Coefficient test. However, no significant differences ($p>0.05$) were found among these variables.

Instructional Support for Blended Instruction

This section addresses the issue of instructional support for faculty in delivering blended instruction.

Research question set 3. In what ways are faculty involved in blended instruction? (a) Are faculty involved in developing, designing, and maintaining online instructional components? (b) What are faculty attitudes toward and perceptions of blended instruction? (c) How do institutions support faculty involved in blended instruction?

(a) Are faculty involved in developing, designing, and maintaining instructional components?

(1) Faculty Involvement in Blended Instruction

In order to examine how faculty are involved in the process of delivering blended instruction, responses to Q9 (B) (*Which of the following procedures are you involved in when delivering online components of your instruction?*) and Q10 (B) (*How do you rate your technology skills in developing, designing, and maintaining online courses or online components of your courses?*) were analyzed. According to the data analysis, 122 faculty of 133 faculty participants responded to question 9. Of the 122 respondents, 117 respondents (95.9%) reported participation in at least one of the five (5) course development activities (see *Table 12*) while five (5) respondents (4.1%) answered that

Table 12: Faculty Participation in Online Course Development Activities (N=122)

Item	Frequency	Percent
(a) Designing course content	96	78.7%
(b) Organizing instructional materials	98	80.3%
(c) Designing course website(s)	56	45.9%
(d) Developing course materials	94	77.0%
(e) Maintaining a developed course website	68	55.3%
(f) None of the above	5	4.1%

*Q9 for faculty: Which of the following procedures are you involved in when delivering online instruction?

they did not participate in any of the activities at all. Of the 117 respondents, 96 respondents (78.7%) were involved in designing course content, 98 respondents (80.3%) were involved in organizing instructional materials, and 94 respondents (77%) were involved in developing course materials (77.0%). A small number of respondents were involved in maintaining a developed course website (55.3%), and fewer than half (45.9%) were engaged in designing a course website.

One of the faculty respondents expressed an active involvement in online course delivery in the comment box. He/she noted engagement in activities such as “designing learning activities, identifying resources, creating and maintaining an online grade book, monitoring asynchronous discussion forums, holding online office hours, answering more email than you could ever imagine, facilitating group chats” .

The responses to Q11 (B) showed that the faculty were confident in technology skills needed to develop online instructional components of their courses. Question 11 required Likert scale responses to six (6) items (strongly agree --> strongly disagree) and the responses were converted to number systems in order to identify degrees of faculty technology skills. A score of 6 was assigned to “strongly agree” and the minimum score

Table 13. Faculty Technology Skills as Reported By Faculty Respondents

Question	N	Minimum score	Maximum Score	Mean	Std. Deviation
Q11	129	0	6	4.03	1.375

*Q11(B): How do you rate your technology skills in developing, designing, and maintaining online courses or online components of your courses?

Table 14. Technology Skills by Age as Reported by Faculty Respondents

Age	Mean	N	Rank	Std. Deviation
(A) 30 or less	3.73	11	Third	1.421
(B) 31 -40	4.68	22	First	1.086
(C) 41 – 50	4.33	39	Second	1.383
(D) 51 or more	3.63	57	Fourth	1.345
Total Mean	4.03	129		1.375

*Maximum score is 6 and the minimum score is 1. * The mean score larger than 3.5 was considered positive.

of 1 was assigned to “strongly disagree”. A mean score larger than 3.5 was considered positive. When analyzing the responses, faculty members’ competency in developing online instructional components appeared to be high ($M=4.03$), as *Table 13* shows.

When analyzing the data by four age groups ((a) less than 30 years of old, (b) 31-40 years old, (c) 41-50 years old, (d) 51 or more years old), group (B) ($M=4.68$) and group (C) ($M=4.33$) showed high confidence in using technology for developing their blended courses while group (D) ($M=3.63$) and group (A) ($M=3.73$) showed relatively lower confidence than the other groups (see *Table 14*).

When comparing the results by variables such as age and position, there were significant differences in the mean scores by age ($p < 0.01$) and rank ($p < 0.01$) among groups. The comparison of responses of four (4) age groups showed a significant difference between the groups ($p < 0.01$) (see *Table 15*, p.98). In particular, the LSD Tests

Table 15. Comparison of Technology Skills Between Age Groups

Age Groups		Tukey Test			
(1) Age	(2) Age	Mean Difference	Sig.	95% Confidence Interval	
31-40	51 or more	1.050*	.010	.19	1.92
41-50	51 or more	0.702*	0.01	0.16	1.25

* The mean difference is significant at the .05 level.

Table 16. Technology Skills by Rank as Reported by Faculty Respondents

Position	Mean	N	Std. Deviation
Assistant professor	4.48	46	1.130
Associate professor	3.67	27	1.494
Full professor	3.89	47	1.306
Instructor	3.71	7	1.496
Total	4.05	127	1.327

revealed that there was a significant difference between the age groups such as 31-40 years of old age and 51 or more ($p < 0.01$) and 41-50 years of old and 51 or more ($p < 0.05$) in their skills in developing online instructional components.

When analyzing the data by faculty rank, assistant professors ($M=4.48$) expressed the strongest confidence in their technology skills and instructors ($M=3.67$), associate professors ($M=3.69$), and full professors ($M=3.81$) were confident in their skills in developing online instructional components, yet their confidence level was somewhat lower than assistant professors (see *Table 16*). When comparing the mean scores among the four (4) positions (instructor, assistant professor, associate professor, full professor), there were significant differences between the assistant and associate professor groups

Table 17. Comparison of Technology Skills Between Rank

(1) Position	(2) Position	Mean Difference (1-2)	Std. Error	Sig.	95% Confidence Interval	
Assistant professor	Associate professor	.812(*)	.315	.011	.19	1.43
Assistant professor	Full professor	.585(*)	.269	.032	.05	1.12

* The mean difference is significant at the .05 level.

and between the assistant and full professor groups as *Table 17* above shows. Compared to the other groups, assistant professors revealed exceptionally strong confidence in their technology skills.

Of the five (5) respondents who reported no participation in any of the online course development activities, three faculty provided extra information regarding their strategies for online course delivery as follows;

- (1) One faculty member in the department takes the lead in developing the course websites for the required courses (e.g. theory, methods), and all faculty share the course websites to keep the consistency.
- (2) Most of faculty at the University use a locally developed program called Toolkit and do not need to be involved in developing activities.
- (3) Faculty mainly use email for assignment submission to provide feedback, using a course website developed by somebody else.

Summary

Most faculty respondents expressed that they felt comfortable using technology in developing online instructional components in their courses and that they put forth effort to learn necessary technology skills to accommodate students' needs. However,

differences were found in the levels of technology competency confidence in different faculty age groups and levels. Assistant professors between the ages of 31-40 expressed the highest confidence level compared to other groups. Faculty who did not participate in online course development activities employed commercially developed programs or shared websites developed by colleagues for the same courses.

(2) Faculty Attitudes Toward and Perceptions of Blended Instruction

(b) What are faculty attitudes toward and perceptions of blended instruction?

In order to investigate faculty attitudes toward and perceptions of blended instruction, responses to Q20 (B) were analyzed. Question 20 (B) (*Please provide a response to each item by checking the box responding to your level of agreement.*) consisted of five attitudinal items, one perception item, and three items about general instructional practices that might be related to blended instruction. The items required Likert scale responses to six (6) items (strongly agree --> strongly disagree). The responses to the question were converted to number systems in order to identify faculty attitudes and perceptions. A score of 6 was assigned to “strongly agree” and a score of 1 was assigned to “strongly disagree”. A mean score larger than 3.5 was considered positive.

As shown in *Table 18*, respondents generally had positive attitudes toward blended instruction, and they perceived that blended instruction improves the quality of their instruction ($M=5.05$). Most of the respondents were motivated to try blended instruction ($M=4.49$), and were willing to learn technology necessary ($M=5.09$) as well. Furthermore, the faculty were favor of both online and blended instructional formats ($M=4.09$) and perceived that blended instruction could overcome the limitations of online instruction ($M=4.72$). Most faculty preferred classroom instruction to online instruction ($M=4.57$).

Table 18. Faculty Attitudes Toward and Perceptions of Blended Instruction

Items	Mean	SD	N
Attitudes			
a. I prefer classroom instruction to online instruction.	4.57	1.451	114
b. I like both online and classroom instruction.	4.09	1.570	111
c. Blended instruction can overcome the limitations of online instruction.	4.72	1.218	109
d. I am motivated to try blended instruction.	4.49	1.489	113
e. I am willing to learning new technology for my classes.	5.09	1.211	115
Perception			
f. Blended instruction is an option for students on or near campus only.	3.42	1.714	108
Instruction			
g. Student learning outcomes are influenced by instructional delivery methods.	5.17	1.116	115
h. Quality of instruction is influenced by instructional methods.	5.05	1.329	114
Involvement			
i. I am regularly involved in online instruction.	2.99	1.998	111
j. I am regularly involved in blended instruction.	4.46	1.682	112

* In this case, maximum score is 6 to be strongly agree and minimum score is 1 to be strongly disagree.

*The mean score larger than 3.5 is considered positive.

Consequently, while a large number of faculty were regularly involved in blended instruction, a low number of faculty were involved in online instruction ($M=2.99$).

Regarding their general instructional practices in relation to blended instruction, most respondents were regularly involved in blended instruction ($M=4.46$) and perceived that student learning outcomes were influenced by instructional delivery methods ($M=5.17$).

Detailed information is presented in *Table 18*.

In some cases, faculty preferred traditional instructional methods, due to various instructional situations. Following is an example;

“Students don't always, or perhaps seldom, prefer a course where they learn a lot because that's a lot more effort; students and faculty will continue to

choose mostly lecture because it's much easier for both faculty and students; younger students often like to have strong direction and in an online setting they may feel more isolated and unsure of themselves.”

Ironically, even though the participating faculty answered that they were motivated and willing to learn new technology and instructional formats, the responses to question Q11 (A) asking about challenges in assisting faculty in the use of technology showed different results. IHE respondents replied that the biggest challenges for them in assisting faculty were lack of faculty time, motivation and enthusiasm, and faculty workloads. Many faculty also commented that it costs extra time and effort to develop and maintain their course websites when pursuing blended instruction and that there should be institutional support or incentives to compensate for their extra work.

Summary

Overall, faculty reported motivation to learn new technology and employ blended instruction to improve the quality of their instruction. They also strongly perceived that instructional delivery methods greatly impacted students' learning outcomes. However, IHE representatives reported that most faculty lacked time for learning new technology and adopting new instructional formats. In addition, heavy workloads and absence of incentives were the biggest challenges for the staff in the faculty development organizations when encouraging faculty to adopt new instructional methods.

(3) Institutional Support

(c) How do institutions support faculty involved in blended instruction?

In order to determine levels of instructional support for faculty in delivering blended instruction, responses to question 12 (A) and 13 (A (a-g)) were summarized and analyzed.

Table 19. Levels of Instructional Support for Faculty in Using Online Technology For Teaching as Reported by IHE Representatives

	N	Minimum	Maximum	Mean	Std. Deviation
Q12	33	1	6	4.42	1.370

*Q13: How do you rate your school's support for faculty in using online technology for teaching?

* Maximum score is 6 to be "very supportive" and the minimum score is 1 to be "not supportive at all".

Question 12 (A) asked about the levels of instructional support for using online technology for teaching and required Likert scale responses to six (6) items (very supportive --> not supportive at all). The responses to the question were converted to number systems in order to identify the levels of support. A score of 6 was assigned to "very supportive" and a score of 1 was assigned to "not supportive at all". A mean score larger than 3.5 was considered positive. The results showed that the participating university representatives perceived that their institutions were very supportive in assisting faculty in developing and delivering online instructional components as *Table 19* indicates ($M = 4.42$, $SD = 1.37$). Question 13 (A) asked for the kinds of support provided by universities. According to the results for Q 13 (A), of the total 33 universities, 31 universities (96.9%) had a help desk for students and faculty, 29 universities (87.9%) provided some kinds of help necessary for delivering online courses, 26 universities (78.8%) offered workshops about instructional design practices for different instructional delivery systems, and 24 universities (77.4%) provided instructional designers or specialists. However, only a fewer participating universities employed incentive systems (32.3%) to encourage faculty. Faculty were required to participate in

Table 20. Institutional Support for Online Course Development as Reported by IHE Respondents

Item	Frequency (N=33)	Percent
A help desk is available to students and faculty for assistance with technical problems.	31	96.9%
My university supports faculty in delivering courses online by providing necessary help of other kinds.	29	87.9%
My university offers workshops about instructional design practices for different instructional delivery methods.	26	78.8%
My institution provides faculty an instructional designer or instructional technology specialists for online course development.	24	77.4%
My university offers incentives for faculty members who agree to deliver courses online.	10	32.3%
Faculty are required to participate in certain training sessions or workshops prior to teaching courses with online instructional components.	8	24.2%
My university provides faculty with specific standards for online course development.	7	21.9%

* Q13. What kinds of support does your university provide faculty to teach online?

certain training sessions or workshops prior to teaching online courses in only eight (8) universities (24.2%). Detailed information is presented in *Table 20*.

In addition, several respondents who provided extra information reported that choice of format is left to faculty and departments; faculty make their own decisions regarding their instructional modality and the universities did not require faculty to employ certain types of instructional delivery formats. In other cases, the departments and programs decided to offer blended courses, yet the universities did not mandate any types of instructional formats in any centralized manner.

Regarding instructional goal(s) for course delivery, the participating universities desired to increase students' accessibility to their programs by increasing online instructional components or offering online courses. For instance, a majority of

Table 21. Institutional Goals for Course Delivery As Reported by IHE Representatives

Item	Frequency (n=33)	Percent (Total=100%)
Our goal is to increase the number of blended courses in order to provide students with more options in their learning.	19	63.3%
Our goal is to increase the number of online degree programs in order to increase student accessibility to our programs.	16	53.3%
Our goal is to put course materials online as often as possible in order to complement classroom instruction.	16	53.3%
We do not have a specific goal for course delivery.	5	17.2%
Our goal is to create a fully developed virtual campus, not requiring classroom attendance.	1	3.3%

* Q(12) B: What are the biggest challenges for assisting faculty in delivery of online or blended courses?

universities' goals were to increase the number of blended courses (63.3%), online degree programs (53.3%), and putting materials online (53.5%) in order to provide students with more options in their learning. Only one university responded that creating a fully developed virtual campus was the instructional goal. Detailed information is summarized in *Table 21*.

Summary

The participating universities seemed to be supportive in assisting faculty with developing online instructional components for their blended instruction. Most of them reported such support as online help desk, workshops, instructional designers, and technology specialists. Their goals included (1) increasing the number of blended courses; (2) increasing the number of online degree programs; (3) putting course materials online as often as possible in order to better accommodate students' needs and utilize universities' facilities efficiently.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

This chapter provides a summary, conclusions, discussion, implications, and recommendations of the study.

Summary

The purpose of this study was to investigate current practices in blended instruction. In particular, the study sought to examine the predominant characteristics and potential variations of blended instruction in the extensive doctoral research universities as classified by the Carnegie Foundation. Surveys were conducted with a sample of faculty and IHE representatives from the 151 extensive research universities. The survey data included 34 staff responses from 33 different universities and 133 faculty responses from 30 different universities out of the total 151 universities. Therefore, findings are limited to the practices within those participating universities.

In this study, blended instruction was defined as an instructional delivery method in which any portion of online instruction is replaced by classroom instruction. The study examined instructional activities that might or might not be consistent with this definition or challenges encountered by the users as well as advantages of blended instruction perceived by the users. The study also identified institutional support, and faculty users' attitudes toward and perceptions of blended instruction. Three research questions were developed to examine the issues, and each question had a subset of questions designed to provide more detailed information.

The study was divided into two phases: a pilot phase and a data collection phase. In the pilot phase, the survey instruments were tested to determine if they could collect data necessary to answer the research questions and if procedures were appropriately defined. The pilot study was conducted at the University of Tennessee. In the second phase, data were collected from participating universities through the online survey instruments tested in the pilot phase and refined as needed. Data collection took place between April 2005 and June 2005.

Conclusions

Conclusions developed from findings reported in chapter 4 are presented by research question.

Question 1: How do faculty and institutional representatives define blended instruction?

Conclusion: *Most of the respondents defined blended instruction as an instructional delivery format that combines classroom and online instruction.*

72% of the total participants defined blended instruction as a combination of online and classroom instruction, sometimes including a combination of different delivery methods in that a variety of teaching strategies, technology tools, and applications are integrated together within the format.

Question 2. How is blended instruction currently being practiced?

Question 2(A): *What types of instructional delivery methods, technologies, instructional components, and assessment methods are currently being used?*

Conclusion: *The most common instructional delivery format in the participating IHE's was blended instruction that adds online instructional components to classroom instruction. Within this format, Online Course Management Systems (CMS) and multimedia presentation tools were the most common technology for course delivery, and "discussion" was the most common instructional activity. Most surveyed universities did not have evaluation procedures specifically designed for blended instruction.*

More than four (4) kinds of instructional formats were reported in use in 90% of the participating universities. The most common instructional delivery format used by the surveyed universities and their faculty was classroom instruction using online instructional components as supplementary materials. Within the instructional format, many participating faculty reported variations in practice, depending on the nature of the courses, institutional policy, and classroom situations. While a blended instructional method was used in many of the participating universities, knowledge about appropriate evaluation procedures or instruments was minimal in most of the surveyed universities.

Question 2 (b): *Why, how, and to what extent is blended instruction being used in the higher education institutions?*

Conclusion: *Blended instruction has been adopted by many of the participating universities. The most common format for blended instruction in the universities surveyed was 60 percent or more classroom instruction with the remainder being online instruction. The most common reason given for use of blended instruction was convenience of the faculty member and students.*

Of the 128 faculty respondents to the responding questions, 111 faculty reported experience with the format. Faculty reported that they can reduce their time and effort in explaining items such as class schedules and assignments, and handling administrative work (i.e. class roll, grading) by adopting online instructional tools. They also reported that the proportion of each instructional component might differ depending on the characteristics of a course and the situations encountered by both instructors and students.

Questions 2(c): *Are instructional practices different based on institutional characteristics such as type of institution, discipline area, and/or characteristics of instructors such as age, gender, experience, and position?*

Conclusion: *No significant differences were found in instructional practices based on institutional and instructor characteristics.*

The Chi Square test and the Lamda coefficient test were performed to try to find differences among institutional types and instructor characteristics. However, no significant differences ($p > 0.05$) were found among the variables such as type of institution, discipline area, or characteristics of instructors.

Question 3: *In what ways are faculty involved in blended instruction?*

Question 3(a): *Are faculty involved in developing, designing, and maintaining online instructional components?*

Conclusion: *Most faculty who adopted the blended instruction were actively involved in developing and delivering the instructional format and perceived that they had the skills necessary to develop their own course materials.*

Of the 122 respondents to the responding question, 117 respondents (95.9%) reported participation in at least one of the five (5) course development activities. Of the 122 respondents, 96 respondents (78.7%) were involved in designing course content, 98 respondents (80.3%) were involved in organizing instructional materials, and 94 respondents (77%) were involved in developing course materials.

Question 3(b): *What are faculty attitudes toward and perceptions of blended instruction?*

Conclusion: *Respondents had positive attitudes toward blended instruction and perceived that blended instruction can overcome the limitations of online instruction.*

Most of the respondents were motivated to try blended instruction and were willing to learn technology necessary for their classroom use. They were in favor of both online and blended instructional formats and perceived that blended instruction could overcome the

limitations of online instruction. They also expressed belief that instructional format greatly impacts students' learning outcomes.

Question 3(c): *How do institutions support faculty involved in blended instruction?*

Conclusion: *The participating universities were supportive in assisting faculty in development of online instructional components for their blended instruction in a variety of ways.*

Most universities provided faculty with necessary help such as an online help desk, workshops, instructional designers, and technology specialists. In addition, most universities' goal expressed by institutional representatives was to increase the number of online or blended courses to better accommodate students' needs and utilize their universities' facilities efficiently.

Additional Conclusions

Additional conclusions that are closely related to research questions developed from findings reported in chapter 4 include the following:

- 1. The definitions of blended instruction provided in the literature and in this study were not sufficient for explaining the phenomenon of blended instruction and did not correctly reflect the diversity of activities in practice.*

Generally, the literature defines blended instruction as a format of online instruction in which some portion of online instruction is replaced by classroom instruction. However, in this study, the respondents used online instructional materials to replace or supplement classroom instruction. Thus, the approach was the opposite of typical definitions of blended situations because some classroom instruction was replaced by online instructional components rather than the other way around.

2. *Data indicate that within the participating IHE's, there is a great deal of experimentation in the use of mixed media.*

Instructional approaches such as: proportion of each instructional modality; use of technology and teaching strategies based on course characteristics; instructional needs; instructors' individual choices; and, institutional requirement and environments all showed some degree of variability. In addition, the participating institutions were diverse in both the extent to which online and classroom methodologies were employed and in what ways they were employed.

3. *Primary reasons for institutional use and support of blended instruction appear to be solving of facilities problems and/or increasing online instruction. The primary reason for faculty use of blended instruction appears to be personal convenience.*

The goals of most universities were to increase the number of online or blended courses to better accommodate students' need and to utilize facilities more efficiently. Faculty reported their reasons for using use blended instruction were convenience, flexibility, and efficiency in presenting instructional materials and communicating with students. Faculty usually use a CMS provided by the institution because they did not need to be involved in its development and because they receive help when needed.

Discussion

Advantages of Blended Instruction

Advantages of blended instruction were discussed by the faculty and the IHE representatives from three different perspectives, institution, learning, and instruction.

From an institutional perspective, the university did not need to be concerned about constructing new buildings. They could maximize revenue from existing assets when increasing the number of blended courses. From a student perspective, the blended course format provided students with more options for their learning modalities. From an instructional perspective, there were many advantages discussed. Many of the respondents shared their experiences with blended instruction as follows: (a) information related to the course is current and accessible so that student can have more flexibility and enjoy various teaching resources available on the course website; (b) instruction provides optional learning methods for students; (c) some shy students can participate in the class more readily; (d) students still feel like they have a "connection" to the professor because of the face-to-face instruction; (e) blended instruction provides students with opportunities to learn in a social learning environment but also with opportunities for self-paced and student directed learning; (f) multiple methods are more effective than a single method; (g) students have convenient access to course materials and it is easy for them to see what was covered and when; and (h) more authentic experiences, civility, and better (deeper) communications are available for students.

Challenges of Delivering Blended Instruction

Respondents also expressed apprehension and disadvantages of the instructional format. They perceived that the effectiveness of using online instructional materials varies tremendously, depending on the faculty member's ability to use technology and students' attitudes; technology does not make a better teacher in any case. In particular, one of the IHE respondents expressed concerns that hybrid and fully online instruction

would lower the quality of instruction, since teaching hours have to equate with contact hours established by Carnegie standards for student credit hours.

Overall, the disadvantages revealed in this study were consistent with the problems that have often been addressed in the literature dealing with challenges for faculty when pursuing new instructional methods that require adopting technology. The comments from the several participating faculty are categorized into four areas:

(1) Faculty Workload and a Lack of Time

- When faculty learn a new system to use and the next semester there is another new one to learn,
- Added workload in developing course websites, participating in online discussion forums, managing listserv, answering e-mails, etc.,
- For the instructor, too much extra time is needed to handle/observe 'class dynamics. No matter what the instructor says (or includes in syllabus) to the students regarding the time the instructor will review and answer their questions, students expect that the instructor will answer all their online questions immediately.

The literature often claims that the challenges to faculty and staff who are involved in blended instruction are as follows: the extra workload, lack of motivation, and the initial cost and time for preparing courses. Findings of this study are congruent with the claims of the literature.

(2) Lack of Technology Skills and Technical Problems

- Lack of expertise and technical difficulties for faculty dealing with online course management systems, computer problems, and a lack of sufficient

instructions in the CMS, and/or constantly changing instruction were identified as problems.

- Those students who do not understand the technology or do not feel comfortable with the technology can get left behind, if these problems are not caught. Then, an extra teaching component comes into play- teaching the technology, which distracts from teaching course content.
- Students have different technology platforms at home which contribute to access problems. They also have differing technological capabilities.
- Serious problems in using library resources because of restrictive copyright laws that apply to digital copies and not print ones sometimes emerge.

(3) Student Knowledge of and Access to Technology

- Some faculty respondents indicated that students with differing technological access make interacting with and within the class difficult. For example, if students do not have a personal computer, they may have difficulty completing assignments, as easily as those who have a personal laptop.

The survey participants in this study claimed that students' access to required technologies is one of the biggest challenges in their classes. Sometimes, students do not have the necessary equipment or their equipment is not compatible with that required for their courses. This issue returns to the issues of institutional support.

(4) Instructional Problems

Some faculty respondents noted that;

- It is hard to build a sense of community and to design learning activities that require students to collaborate.

- It can sometimes be distracting if the lesson is not well planned and structured; however, technological resources are not 100% reliable. Therefore, it takes longer to prepare a lesson and use these resources in class.
- Students don't always communicate well via email; if they miss the class meeting, they may not be informed about the course requirements.
- A faculty member commented that it would be disadvantageous to not have a balance because personal contact is also very important to students. He/she uses the online components to prepare them for asking the questions. The face to face sessions afford them personal interactions that are needed.
- Many students do not take online instruction as seriously as classroom instruction.
- It is more difficult to evaluate students when you don't really "get to know" them because of the limited face-to-face interactions.

Suggestions for Delivering Blended Instruction

As repeatedly mentioned, the practices in and effectiveness of blended instruction were different based on instructional situations and institutional policies. While certain institutions required faculty to employ online tools as a supplement to classroom instruction, other institutions were concerned about the quality of instruction when replacing classroom instruction with online instruction. In most cases, the decision to adopt different instructional formats was made by department or faculty rather than institution. However, institutional support in pursuing diverse instructional delivery formats was important in creating successful learning environments. One of the suggestions made by a participating respondent makes sense; he suggested using a course

management system or technology provided by the university rather than using a personal website so that faculty can get help at any time. Many other faculty respondents also provided valuable suggestions to be considered when developing and delivering blended instructional methods:

- “Seek out others who have used technology tools to their full advantage and learn from them. Most of them are willing to share their knowledge.”
- “Get a good mentor to walk you through your first course-or team teach your first course.”
- “Online websites, videos, and PowerPoint make it much easier to teach a class and to have the most up-to-date information in class and available for students....if students miss class they can get info from the sites we used for the lecture.”
- “It is necessary to achieve an appropriate balance between online and face-to-face instruction. Too much online instruction can make it difficult to cultivate positive and open relationships with students.”
- “Online chats work well when you have a topic that revolves around readings. I like using focus topics for online chats and then I have only so many participate in each chat. That way they and I can keep up. I break up my students into groups and have them work as a group before posting to the total course forum. I also develop the Blackboard site completely with all the materials etc., so that folks who have variable schedules can work ahead if needed.”

- “Try to get student feedback about the usefulness of an online component. Allow for student input in the process.”
- “Be prepared with alternatives, prepare students with proper conceptual frames and direction.”
- “Set it up well initially so you don't have to redo it later.”
- “Provide orientation to the technology at start of every course.”
- “Go slowly- try one thing at a time- get feedback from students.”
- “Make sure you have someone you can fall back on when you have difficulties with constructing websites and using technology; don't wait until you've exhausted every option including exhausting yourself!”
- “Know well the technological resources available, at least those that seem to be useful for the particular class. Plan the lesson considering the possible uses of the technology. Allow extra time for both class preparation and class presentation.”

It appears that technical capabilities play a very important role in blended instruction. It would appear that students have to have a fully equipped computer with necessary software and a high speed internet connection. A help desk or help line should be available to provide technical and administrative support as well. In order to increase students' access to necessary classroom technologies, universities have to actively operate facilities such as computer labs and instructional service organizations. The computer labs on campus should be equipped with necessary hardware and software and have hours of operation that accommodate on and off campus students. In some cases, the

equipment used for classroom purposes probably needs to be available for students to check out as well.

Implications

Implications of the Return Rate

Findings of this study are limited to faculty who are actively engaged in online instruction in some way. 20 faculty and four IHE representatives in the target population returned the email indicating that they did not have online instructional components at all in their departments or universities, or that they did not use online instructional components even though they were available.

According to the information in the returned emails, faculty or IHE representatives who chose not to participate in this study had not been involved in blended or online instruction. Even though, group A, representatives of the faculty development organizations who were to assist faculty in developing online instructional components were selected, four (4) email recipients who returned the email indicated that they had not put any effort into online instruction. Considering the return rate and returned email messages, the number of universities which still pursue primarily traditional instructional formats may be more than one would anticipate.

Even among the departments to which participating faculty belonged, there were more faculty members who did not participate in the study than those who did. About 20 faculty members returned the researcher's email explaining that since they did not use any online components, they could not participate in the survey. Two (2) faculty responded that their departments were planning to develop online instructional units in

the current semester, but nothing was yet implemented. Therefore, even though the researcher assumed that most of the faculty in the departments selected had been engaged in blended instruction in some way, there appear to be a larger number of faculty who do not employ the format than was thought.

Implications Regarding Terminology and Skills

Responding IHE representatives were familiar with the terminologies, instructional tools, and methods that were used in the survey instrument. However, some faculty respondents claimed to be unfamiliar with the terminology. In fact, about 15 faculty email recipients including the sample for the pilot study returned the emails indicating that they could not participate in the study due to unfamiliarity with the terminology used in the survey instruments. Interestingly, a few participants also reported that they were not aware of the terminologies used for the instructional formats and tools that they are currently employing. It appears that terminology commonly used among technology professionals is not the language of most faculty.

Given the information provided, faculty did not obtain knowledge and skills necessary in pursuing diverse instructional formats and strategies through training or workshops offered by faculty development centers available in their universities. Since a question asking where and how faculty learned their skills to develop online instructional components was not included in the survey instrument, it is not clear if they utilized institutional support organizations. Yet, having the information that the greatest challenges for faculty in developing blended instruction are a lack of time and heavy workload, it is logical that faculty do not attend or participate in training sessions or workshops offered by the organizations for their professional development. One can

imply from this information that new approaches to building new knowledge and skills among faculty must be found, perhaps web-based or CD modules.

Implications Regarding Practices in Blended Instruction

In practice, blended instruction included both online and classroom instruction, but in most cases, online instructional materials were being used to replace or supplement classroom instruction. In this study, most respondents defined blended instruction as a combination of online and classroom instruction, yet their practices were diverse.

In many cases, classroom instruction was a major component and online materials were being used as supplemental materials. Within this format, some online materials, even simulations, were being used, but in other instances, merely uploading syllabi or course calendar was the primary technology application. Then, again some faculty were employing multimedia presentations, discussion, and other more sophisticated applications. In rare cases, online instruction was a major component of instruction, while classroom meetings were scheduled a few times per semester.

There were also cases in which instruction was delivered to on campus students in class and to distance learners in a synchronous online format. Synchronous online instruction was composed of streaming videos and audio. Off campus learners could ask questions and participate in classroom discussions using a microphone. They could retrieve class videos and lecture notes on the course website and in-class students also had access to online course materials. In fact, faculty who adopted this format reported that it was very beneficial for in-class students since they could retrieve lectures uploaded online.

Implications Regarding the Instructional Support

Comments from participants suggest that the support system(s) available dictate(s) to some extent the format used. Most faculty members reported using CMS such as BlackBoard, WebCT, personal website, or other support systems that are available in their universities. Even though universities do not mandate certain kind of instructional course delivery systems, it is difficult for faculty to receive support when using other systems. Technological and instructional support available to faculty members result in limited options for them to choose their own instructional method and support the instructional format that is chosen by the institution regardless of instructor preference.

Implications of Blended Instruction: Current and the Future

Blended instruction is implemented in many diverse ways, but it is still in the early stages of adoption. At the present time, the emphasis of blended instruction is on instructional delivery format itself and therefore activities using a variety of instructional media within the format are minimal. Uploading syllabi, making lecture notes available online, and communicating with students are the most popular ways of using blended instruction. More sophisticated technologies are not yet fully utilized in blended instruction, yet, as concluded, there is currently a great deal of experimentation in the use of mixed media. Based on the findings of this study, in the future a combination of instructional activities utilizing multiple media within the delivery format is likely to be a common form of blended instruction and blended instruction will be an important component of higher education institutions.

Recommendations for Future Research

Many prior writers (Murphy, 2002, 2003; Young, 2002) agree that blended instruction is an effective instructional delivery format and is beneficial to faculty, students, and institutions. Christensen (2003) claims that it should be encouraged for everybody. On the other hand, writers (Barr & Tag, 1995) have also revealed challenges and problems for faculty in employing blended instruction. Becker (1994) points out that the process of adopting technology depends on school environments. When institutional support is available and exemplary users are in the department, it is easier for other faculty to pursue their ideas or instructional delivery formats. This study provided information concerning current practices in blended instruction in a number of higher education institutions, focusing on definitions, characteristics of instructional method, and institutional support. In particular, this study provides valuable information for institutions about faculty's perceptions of institutional support, instructional situations, and needs in the area of blended instruction. IHE representatives may better understand from faculty' comments what they need and how to support them in pursuing their instructional goals. However, more research is needed in order to better understand the use of blended instruction to enhance learning and teaching practices. Therefore, it is recommended that:

1. This study should be replicated and extended to different classifications of universities.

This study focused on the extensive doctoral universities. Practices, definitions, support, etc. may be different in other types of universities.

2. This study should be replicated and extended to business organizations.

This study focused on higher education institutions. Instructional needs, design approaches, use of technologies, and emphasis on instruction (i.e. skill-driven, knowledge-driven) may be different in business settings.

3. Studies of the impact of blended instruction on institutional problems should be conducted.

This study found that a primary reason for institutional use and support of blended instruction was an attempt to alleviate facilities problems. Whether blended instruction really can assist in solving fiscal or facilities problems is yet to be determined.

4. Case studies within institutions should be conducted.

This study found that there are many faculty who have adopted blended instruction for their course delivery. However, no in-depth information within any single institution was collected.

5. Comparative studies (quasi-experimental, experimental) of the results of blended instruction, online instruction, and classroom instruction should be conducted.

This study did not deal with the results of different instructional delivery methods. Is blended instruction more effective than other methods? What are the strengths of blended instruction compared to other methods? Does desired learning take place?

6. A study of students' perceptions of and attitudes toward blended instruction should be designed and implemented.

This study did not deal with students' perceptions of or attitudes toward blended instruction. What are the benefits of blended instruction perceived by students? What are the challenges of blended instruction perceived by students? Why do students choose to take blended courses?

7. A study of challenges and gaps in institutional support for faculty innovation is needed.

This study identified some challenges for faculty in employing blended instruction and challenges for IHE staff in assisting faculty. To what extent do institutions support faculty in their practices of pursuing instructional innovation? Are there gaps? Are there types/forms of assistance that could be given that aren't available?

There are opportunities for research on instructional delivery methods. In particular, studies of technology-enhanced instructional delivery are scarce. This study

has provided valuable information for higher education institutions as they seek to develop technology based-courses.

Among other findings, this study identifies that there is a great deal of variation in practices and that current definitions of blended instruction are not appropriate to explain current practices. Therefore, the concept of blended instruction should be rethought based on current practices, and the definition of blended instruction should be revised accordingly. Further research can assist in developing the foundations of blended instruction delivery methods and better explaining practices of blended instruction.

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APPENDICIES

APPENDIX A

Group A

34 responses from 34 different universities
(Population: 151 universities)

No.	Participating university
1	Saint Louis University
2	Brigham Young University
3	The University of Mississippi
4	Northeastern University
5	University of Alabama at Birmingham (UAB)
6	University of Connecticut
7	The University of Alabama (UA)
8	Georgia State University
9	University of Houston
10	Michigan State University
11	University of Maryland
12	North Carolina State University
13	University of Tennessee
14	The University of Iowa
15	Boston College
16	University of Kansas Edwards Campus
17	Texas Tech university
18	Western Michigan University
19	University of Oregon
20	University of Notre Dame
21	University of Louisville
22	Syracuse University
23	University of Washington
24	Washington State University
25	Syracuse University
26	University of Kentucky
27	University of Nebraska – Lincoln
28	University of Arizona
29	Kansas State University
30	Texas A&M University
31	University of North Texas
32	Southern Illinois University Carbondale
33	Stony Brook University
34	Georgia Institute of Technology

GROUP B

(131 responses from 30 different universities as of June 2, 2005)

*Population: 2 departments from 20 universities

	University	Departments	Responses
1	Auburn University	<ul style="list-style-type: none"> • Curriculum and evaluation • ESL/EFL 	7
2	Birmingham Young University	<ul style="list-style-type: none"> • Counseling and Special Education • Teaching and Learning 	8
3	Georgia Institute of Technology	<ul style="list-style-type: none"> • Department of Architecture • Industrial Design Program 	2
4	Georgia State University	<ul style="list-style-type: none"> • Nutrition • Math/stats 	4
5	Lehigh University	<ul style="list-style-type: none"> • Curriculum and Instruction 	1
6	New York University	<ul style="list-style-type: none"> • Teaching and Learning 	5
7	Northeastern University	<ul style="list-style-type: none"> • Counseling and applied psychology • Information science 	2
8	Northern Illinois University	<ul style="list-style-type: none"> • Education 	4
9	Northwestern University	<ul style="list-style-type: none"> • Department of English 	1
10	Rice University	<ul style="list-style-type: none"> • Economics 	1
11	University of Alabama	<ul style="list-style-type: none"> • Educational Leadership, Policy, and Technology Studies 	3
12	University of Arizona	<ul style="list-style-type: none"> • Teaching and learning • Educational Psychology 	9
13	University of California, Los Angeles	<ul style="list-style-type: none"> • Public Policy • Surgery 	5
14	University of California, Riverside	<ul style="list-style-type: none"> • Education 	3
15	University of California, Santa Cruse	<ul style="list-style-type: none"> • Economics 	2
16	University of California-Davis	<ul style="list-style-type: none"> • Educational leadership 	1
17	University of California-San Diego	<ul style="list-style-type: none"> • School of International relations • Department of communication 	3
18	University of Delaware	<ul style="list-style-type: none"> • Department of Geography 	1
19	University of Denver	<ul style="list-style-type: none"> • Graduate school of International studies 	3
20	University of Georgia	<ul style="list-style-type: none"> • Instructional Technology • Mathematics and statistics 	8
21	University of Iowa	<ul style="list-style-type: none"> • Educational statistics and measurement • Language, literacy and culture 	8

22	University of Kentucky	<ul style="list-style-type: none"> • Department of Communication • School of Information Science 	6
23	University of Miami	<ul style="list-style-type: none"> • Exercise & Sports Science Education 	2
24	University of Missouri	<ul style="list-style-type: none"> • Information science and learning Technologies 	3
25	University of North Carolina at Chapel Hill	<ul style="list-style-type: none"> • Educational leadership • Department of Asian Studies 	4
26	University of Tennessee, Knoxville	<ul style="list-style-type: none"> • Various departments 	16
27	University of Virginia	<ul style="list-style-type: none"> • Asian and Middle East 	2
28	Utah State University	<ul style="list-style-type: none"> • Special Education and Rehabilitation • Agriculture systems technology and education 	6
29	Virginia Polytechnic Institute and State University	<ul style="list-style-type: none"> • Teaching and learning • Department of Educational Leadership and Policy Studies 	6
30	Washington University at Saint Louis	<ul style="list-style-type: none"> • Economics • Mathematics 	5
		Total	133

APPENDIX B

Survey Questionnaire (A)

DEMOGRAPHIC INFORMATION

University: _____

Email Address of Respondent: _____

University Type: Public _____ or Private: _____

Department/center/office Name: _____

Respondent's Position: _____

INSTRUCTIONAL DELIVERY METHODS

1. Which of the following course delivery systems are currently being used in your university (Check all that apply.)
 - (a) Completely asynchronous online instruction
 - (b) Completely synchronous online instruction
 - (c) Combination of synchronous and asynchronous online instruction
 - (d) Blended instruction in which more than 50% of the instruction is delivered online with the remainder being face-to-face.
 - (e) Blended instruction in which less than 50% of the instruction is delivered online with the remainder being face-to-face.
 - (f) Classroom instruction with online supplements
 - (g) Classroom instruction alone
 - (h) Other _____

2. If faculty in your university offer blended instruction, what percentage of the instruction in blended courses would you estimate to be face-to-face? (Check only one.)
 - (a) 5 % or less
 - (b) 6 % - 15 %
 - (c) 16% - 25%
 - (d) 26% - 35%
 - (e) 36% - 40%
 - (f) 41% - 50%
 - (g) More than 50%

- (h) Not sure
3. What kinds of course management systems does your university make available for online instructional components? (Check all that apply.)
- (a) Black board (b) Web-CT (c) Centra (d) Personal website
 (e) Other _____
4. Are all faculty required to use a single course management system? (Check only one.)
 (a) Yes (b) No
5. What kinds of instructional tools are being used in blended courses that are offered in your university? (Check all that apply.)
- (a) Classroom lecture
 (b) Content-based CD-Rom
 (c) Web-based learning modules
 (d) Virtual classrooms
 (e) Asynchronous discussion forums
 (f) Synchronous Web-based seminars/discussion forums
 (g) Online library
 (h) TV/Video tapes
 (i) Simulations
 (j) Listserv
 (k) Other _____
 (l) I do not know.
6. If your university offers blended instruction, which of the following applies to your experience with this instructional method? Please check the boxes that best describe your perception.

Strongly agree <-> strongly disagree

Statement	6	5	4	3	2	1
a. It is more effective than online instruction alone.						
b. It is more effective than classroom instruction alone.						
c. Students prefer blended instruction to online instruction.						
d. It is easier for faculty to manage blended courses than online courses.						
e. Students are satisfied with blended learning environments.						
f. Faculty are motivated to deliver blended instruction.						
g. It is more difficult for faculty to design blended instruction than online instruction.						
h. Faculty are not aware that there is an option to deliver instruction in a blended method.						
i. Comments						

7. Does your university encourage faculty to deliver blended instruction? If so, what are the reasons? (Check all that apply.)
- (a) To overcome the limitations of online instruction
 - (b) To accommodate students with diverse needs
 - (c) To keep up with current trends in education
 - (d) To increase student engagement in classes
 - (e) To increase student enrollment
 - (f) To compete with other schools
 - (g) Other _____
 - (h) My institution does not encourage blended instruction.
8. Are appropriate instruments available to students and instructors for evaluating blended courses? (Check only one.)
- (a) Forms available for both student and instructors
 - (b) Forms available for students only
 - (c) Forms available for instructors only
 - (d) No forms are available
 - (e) Not sure
9. What are your institutional goal(s) for course delivery? (Check all that apply.)
- (a) Our goal is to create a fully developed virtual campus, not requiring classroom attendance.
 - (b) Our goal is to increase the number of online degree programs in order to increase student accessibility to our programs.
 - (c) Our goal is to increase the number of blended courses in order to provide students with more options in their learning.
 - (d) Our goal is to put course materials online as often as possible in order to complement classroom instruction.
 - (e) We do not have a specific goal for course delivery.
 - (i) Other (specify)_____

INSTITUTIONAL SUPPORT

10. Does your department/office directly work with faculty members in developing online or blended courses? (Check only one.)
- (a) Yes
 - (b) No, there is another office that is involved in assisting faculty with teaching online or blended instruction. The office is:_____
 - (c) There is not any office that is involved in faculty development in teaching online or blended instruction.

11. If you answered “yes” to the above question, what are the biggest challenges in assisting faculty in delivery of online or blended courses? (Check all that apply.)

- (a) Lack of financial resources
- (b) Insufficient infrastructure
- (c) Lack of equipment (e.g. hardware, software)
- (d) Lack of faculty motivation and enthusiasm
- (e) Faculty workload
- (f) Other _____

12. How do you rate your school’s support for faculty in using online technology for teaching?

Very supportive < -----> not supportive at all

6 5 4 3 2 1

13. What kinds of support does your university provide faculty to teach online?

Please check the boxes that apply to your institution.

Statement	Yes	No
a. Faculty are required to participate in certain training sessions or workshops prior to teaching courses with online instructional components.		
b. My university offers workshops about instructional design practices for different instructional delivery methods (e.g. online instruction, blended instruction, hybrid instruction, etc.) but faculty are not required to attend.		
c. My university supports faculty in delivering courses online by providing necessary help of other kinds (e.g. software, technical assistance, equipment, funds, time, etc.).		
d. My university provides faculty with specific standards for online course development.		
e. My institution provides faculty an instructional designer or instructional technology specialist for online course development.		
f. A help desk is available to students and faculty for assistance with technical problems.		
g. My university offers incentives for faculty members who agree to deliver courses online.		

Survey Questionnaire (B)

DEMOGRAPHIC INFORMATION

University: _____

University Type: Public _____ or Private: _____

Department Name: _____

Respondent's Position: _____

Respondent's Email Address: _____

Respondent's Gender: (1) Male (2) Female

Age	Teaching experience
(a) 30 years old or less (b) 31 years old – 40 years old (c) 41 years old – 50 years old (d) 51 years old or more	(a) Less than 1 year (b) 1 - 3 years (c) 4 – 6 years (d) 5 – 10 years (e) More than 10 years

1. I currently teach one or more courses in the following formats. (Check all that apply.)
 - (a) Completely synchronous online instruction
 - (b) Completely asynchronous online instruction
 - (c) Combination of synchronous and asynchronous online instruction
 - (d) Blended instruction in which more than 50% of the instruction is delivered online with the remainder being face-to-face instruction
 - (e) Blended instruction in which less than 50% of the instruction is delivered online with the remainder being face-to-face instruction.
 - (f) Face-to-face instruction with supplementary online instructional components
 - (g) Face-to-face instruction
 - (h) Other _____

2. Which of the following instructional designs do you prefer? (Check only one.)
 - (f) Completely asynchronous online instruction
 - (g) Completely synchronous online instruction
 - (h) Combination of synchronous and asynchronous online instruction
 - (i) Blended instruction in which more than 50% of the instruction is delivered online with the remainder being face-to-face instruction

- (j) Blended instruction in which less than 50% of the instruction is delivered online with the remainder being face-to-face instruction.
 - (k) Classroom instruction with online supplements
 - (f) Classroom instruction alone
 - (g) Other _____
3. Have you used or do you currently use blended instruction that combines online and classroom instruction? If so, how many courses do you currently teach or have you previously taught in the blended instructional method? (Check check the total number of courses you teach and/or have taught.)
 - (a) 1-2 courses
 - (b) 3-5 courses
 - (c) 6-8 courses
 - (d) More than 9 courses
 4. How do you usually blend your instruction? How much of the instruction is face-to-face? (Check only one.)
 - (a) Less than 5%
 - (b) 5% - 15%
 - (c) 16% - 30%
 - (d) 31% - 40%
 - (e) 41% - 50%
 - (f) More than 50 %
 5. What kinds of online learning system(s) do you use in your blended courses? (Check all that apply.)
 - (a) Black Board (b) Web-CT (c) Centra (d) Personal website
 - (e) Other _____
 6. In your university, are all faculty required to use a single course management system?
 - (a) Yes (b) No (c) I don't know.

7. What online instructional tools have you used, or do you currently use in your blended instruction? (Check all that apply.)

	Frequently use ←--→ Not use at all					
	6	5	4	3	2	1
Online Courseware or Course Management Systems (e.g., Blackboard, WebCT, Centra, etc)						
Asynchronous Discussion Forums (e.g., Bloggers, WebBoard, WebCrossing)						
Synchronous Presentation Tools (e.g., Centra, Horizon Live, NetMeeting, Placeware, WebEx)						
Synchronous virtual classroom tools						
Electronic Whiteboards						
Instant Messaging, Synchronous Chat Tools						
Listserv						
Learning Object Libraries						
Multimedia Presentation Applications						
Online Grade books						
Online Testing and Examination Tools						
Online practice sessions (items)						
Online review sessions (items)						
Streaming Videos						
Web-based Video conferencing						

8. Which of the following learning activities do you include in the face-to-face instructional components in your blended courses? (Check all that apply.)

- (a) Lecture
- (b) Discussions
- (c) Group work
- (d) Individual work
- (e) Simulations
- (f) Student presentations
- (g) Test/Assessments
- (h) Consultation sessions
- (i) Field trip
- (j) Other _____

9. Which of the following learning activities do you include in the online instructional components in your blended courses? (Check all that apply.)

- (a) Lecture notes
- (b) Discussion forums (synchronous/asynchronous)
- (c) Group work
- (d) Individual work (e.g. drill and practices)
- (e) Simulations
- (f) Student presentations
- (g) Tests/Assessments
- (h) Tutorial/learning activities
- (i) Virtual office hours
- (j) Other _____

10. Which of the following technologies do you use for the face-to-face instructional components in your blended courses? (Check all that apply.)

- (a) Presentation tools (e.g. PowerPoint, Hyperstudio)
- (b) TV/Video tapes
- (c) Hands-on materials
- (d) CD-Rom based instructional materials
- (e) Content specific technology applications
- (f) Guest speaker(s)
- (g) Other _____
- (h) I do not use technology in my face-to-face instruction.

11. Which of the following procedures are you involved in when delivering online instruction components in your blended courses? (Check all that apply.)

- (a) Designing course content
- (b) Organizing instructional materials
- (c) Designing Course Website(s)
- (d) Developing course materials (e.g. activity materials)
- (e) Maintaining a developed course website(s)
- (f) Other (Please explain.) _____
- (g) None of the above

12. If you marked (g) in question 11, please describe how online instructional components of your blended courses are developed?

13. How do you rate your technology skills for designing, developing, and maintaining your blended courses?

excellent ←----- > very poor

6 5 4 3 2 1

14. What are the main reasons you teach blended courses? (Check all that apply.)

- (a) To keep up with current trends in higher education
- (b) To improve my course quality
- (c) It is more convenient for me to teach courses in a blended method since I can better manage my courses and my time.
- (d) Blended classes are more beneficial for students.
- (e) Blended learning environments provide students with more flexibility and options in learning activities than online instruction alone.
- (f) I feel pressure from my institution to participate in blended instruction.
- (g) To increase interaction with students and student engagement
- (h) To increase student learning outcomes
- (i) To accommodate students with diverse learning styles
- (j) To cover topics that cannot be covered in online learning environments
- (k) To overcome limitations that I experienced from online instruction
- (l) To include best features of both online and classroom instruction
- (m) Other (specify) _____

15. If you used/use the blended instructional method, which of the following apply to your experience with it? (Check all that apply.)

- (a) It is more effective than online instruction alone.
- (b) It is more effective than classroom instruction alone.
- (c) It reduces the number of email inquires from students.
- (d) It is easier to manage the class than is the case with fully online instruction.
- (e) It takes less time to design class activities and course activities than online instruction.
- (f) It is not effective since some students can not attend classroom meetings.
- (g) Other _____

16. What do you expect from your students in your blended instruction in addition to their academic achievement? (Check all that apply.)

- (a) Forming online learning communities or virtual teaming
- (b) Developing a sense of belonging
- (c) Learning to use online resources
- (d) Learning to use technology
- (e) Other _____

17. What are the challenges for you in expanding your use of technology for classroom applications?

(Check all that apply.)

- (a) Learning to use technology
- (b) Insufficient time to develop online instructional components
- (c) Too much extra workload
- (d) Technology problems (e.g. computer crash, failure of programs, etc.)
- (e) Lack of student engagement with classroom activities
- (f) Low student achievement
- (g) Handling a large number of email inquiries from students
- (h) Managing student access to the instructor
- (i) Choosing a teaching strategy
- (a) Lack of students' technology skills
- (b) Lack of my technology skills
- (c) Lack of facilities (i.e. no classroom available)
- (d) Lack of institutional support
- (e) Other _____
- (f) I have not experienced any problems.

18. According to your experience, what are the advantages and disadvantages of blended instruction?

19. Do you have any suggestions for other instructors concerning blended instruction?

Faculty attitudes and perceptions of instructional delivery modes

20. Please provide a response to each item by checking the box responding to your level of agreement.

Strongly agree ← → Strongly disagree

Statement	6	5	4	3	2	1
a. I am regularly involved in online instruction.						
b. I am regularly involved in blended instruction.						
c. I am motivated to try blended instruction.						
d. I am willing to learn new technology for my classes.						
e. Student learning outcomes are influenced by instructional delivery methods.						
f. Quality of instruction is influenced by instructional delivery methods.						
g. I prefer classroom instruction to online instruction.						
h. I like both online and classroom instruction.						
i. Blended instruction can overcome the limitations of online instruction.						
j. Blended learning is an option for students on or near campus only.						

Thank you for your participation!!!!

APPENDIX C

Dear Department Head;

I am a doctoral student in the Department of Instructional Technology and Educational Studies at the University of Tennessee, Knoxville. I am currently working on my dissertation for a doctoral degree. The intent of this letter is to ask your permission to conduct a research study with your faculty members in your department.

The focus of my study is current practices in blended instruction. The study also attempts to examine institutional support of and faculty involvement in delivering courses with online instructional components.

I am concentrating my study in the 151 extensive doctoral universities classified by the Carnegie Classification of Institutions of Higher Education, and your department has been selected for inclusion because it appears that you and your colleagues are actively engaged in one or more forms of online instruction.

Attached is a sample of survey instrument developed by the investigator. The faculty's participation is strictly voluntary. If faculty in your department agree to participate in this study, they will be asked to sign an agreement to participate. Any information collected will be kept confidential.

It will take approximately 10 - 20 minutes to complete the survey questions. Please let me know by responding to this email if you are willing to give permission for this research to be conducted you your department.

Should you have any questions or concerns regarding this survey, please contact me at eh1@utk.edu or (865) 974-8143. I greatly appreciate your assistance in this project.

Sincerely,

Eunjoo Oh

Contact Information

Name: Eunjoo Oh

Address: A401 Claxton Addition Cumberland Ave. Knoxville, TN 37996

Telephone: (865)974-8143, (865) 974-1175

Email: eh1@utk.edu

Dear Faculty Member;

I am a doctoral student in the Department of Instructional Technology and Educational Studies at the University of Tennessee, Knoxville. I am currently working on my dissertation for a doctoral degree. The focus of my study is current practices in blended instruction. The study also attempts to examine institutional support of and faculty involvement in delivering courses with online instructional components.

I am concentrating my study in the 151 extensive doctoral universities classified by the Carnegie Classification of Institutions of Higher Education, and your department has been selected for inclusion because it appears that you and your colleagues are actively engaged in one or more forms of online instruction.

Your participation is voluntary; however, your input is very valuable. If you agree to participate in this study please click the address below and complete the informed consent form. After completing the form, click the “agree” button in the informed consent form. It will take you the survey questionnaire.

Please click [\[http://web.utk.edu/~eoh1/consent\]](http://web.utk.edu/~eoh1/consent) in order to participate in the study. The survey will take approximately 10 - 15 minutes to complete.

If you have any questions or comments, you may reply to this message or contact me at (865) 607-3488. I sincerely appreciate your assistance in this project.

Thank you very much for your time and consideration. I will notify you as soon as the information collected is available. A summary of the study results will be posted on the website for your use.

Contact Information

Name: Eunjoo Oh

Address: A401 Claxton Addition Cumberland Ave. Knoxville, TN 37996

Telephone: (865)974-8143, (865) 974-1175, (865) 607-3488

Email: eoh1@utk.edu

Online Survey Informed Consent

You are invited to participate in a study that is designed to gather information about current practices in blended instruction in higher education institutions.

The main purposes of the study are to find out:

- 1) the kinds of instructional delivery methods, technologies, instructional materials, and assessment methods that are currently being used;
- 2) the kinds of instructional formats identified as blended instruction;
- 3) the extent to which blended instruction is being used in the higher education institutions;
- 4) the reasons why faculty blend instruction, and the issues and challenges in employing blended instruction;
- 5) how faculty are involved in different types of instructional delivery; and
- 6) how institutions support faculty involved in different types of instructional delivery.

The survey asks you to provide your email address so that I can know who has and has not responded. However, any information you provide will be kept confidential. Your participation is voluntary but your input is very important. If you agree to participate in this study, please type your name on the form attached below and click the “agree” button to proceed to the survey questionnaire. Participation in the study will be strictly voluntary. You may refuse to participate or withdraw your participation at any time, without penalty. The survey will take approximately 10 - 15 minutes to complete.

If you have questions about this study, please contact Eunjoo Oh at **eoh1@utk.edu** or **(865) 974-1175**.

CONSENT

I have read the above information and agree to participation in this study.

Participant's Name

Participant's Email address

Date

Click this button to submit this form. **Agree**

APPENDIX D

Instructional Delivery Formats Available in the Participating Universities

	University Type	Instructional Delivery Formats						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Private	X			X		X	X
2	Private	X		X	X	X	X	X
3	Public	X		X	X	X	X	
4	Public	X	X	X	X	X	X	X
5	Public	X	X	X	X	X	X	
6	Public			X				
7	Private	X		X	X	X	X	X
8	Private	X				X	X	X
9	Public	X		X	X	X	X	X
10	Public	X		X	X	X	X	X
11	Private			X	X	X	X	X
12	Private				X	X	X	X
13	Public	X			X	X	X	X
14	Public	X	X	X	X	X	X	X
15	Public	X			X	X	X	X
16	Public	X	X	X	X	X	X	X
17	Public			X			X	X
18	Public			X			X	X
19	Public	X		X	X	X	X	X
20	Public	X			X	X		X
21	Public	X		X	X	X	X	
22	Public	X		X			X	X
23	Public			X	X	X	X	X
24	Public	X		X	X	X	X	X
25	Public	X		X	X	X	X	X
26	Public	X	X				X	X
27	Public	X		X	X	X	X	X
28	Public	X	X	X	X	X	X	X
29	Public	X	X	X	X	X	X	X
30	Public	X	X	X	X	X	X	X
31	Public	X	X	X	X	X	X	X
32	Public	X						
33	Public	X	X	X	X	X	X	X
34	Public	X	X	X	X	X	X	X

(1) Completely asynchronous online instruction, (2) Completely synchronous online instruction
 (3) Combination of synchronous and asynchronous online instruction , (4) Combination of more than 50% online and classroom instruction, (5) Combination of less than 50% online and classroom instruction, (6) Classroom instruction with online supplementary materials, (7) Classroom instruction only

Vita

Eunjoo OH

Eunjoo Oh received her doctoral degree in Instructional Technology at the University of Tennessee in Knoxville. She is currently working as an instructor in the department of Education at the Kyungnam University in Korea. Her research interests include technology integration into teacher preparation programs, web-based instruction, blended instruction, and instructional design in online education environments.