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Moving Toward Blended Learning: A Multiple Case Design Based Research Study In Higher Education

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MOVING TOWARD BLENDED LEARNING: A MULTIPLE CASE DESIGN BASED RESEARCH STUDY IN HIGHER EDUCATION

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DEDICATION

This dissertation is dedicated to my family. My beloved wife, Muslime – you bravely joined me when I began my doctoral journey, influentially encouraged me when I faltered and patiently helped me when I needed a hand during this journey. I could not successfully have done this journey without your love and support.

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CHAPTER 1 PROBLEM STATEMENT

Introduction

Online courses are extensively used in higher education with the rapid and exponentially expanding growth of online learning environments. One of the most critical reasons why online learning is widely used is that it has shifted where, when, and how learning occurs (Zhang & Bonk, 2008). In other words, it has eliminated the boundaries of traditional learning such as time and place between instructors and students. By virtue of the use of flexible, open, and ubiquitous applications in online learning, the instructors can utilize and make beneficial tools for managing and generating learning activities that promote critical thinking, problem solving, written communication, and collaboration (McKeachie & Svinicki, 2014, p. 233). Specifically, on account of rapid technological advancement, mobile devices have become ubiquitous, and all-in-one mobile devices with multiple functions that serve in instructional settings in today's classrooms (Hung & Zhang, 2012). Schroeder, 2005 (as in cited Corbeil & Valdes-Corbeil, 2007) concisely summarized the power of mobile learning by stating that "e-learners will no longer be chained to their computers and network connections, they will be learning while hiking in the mountains, strolling on the beach, or jogging along the city street" (p.51).

However, although the online learning environment has its benefits, it has its drawbacks (Chou & Chou, 2011). For instance, a lack of communication or absence of face-to-face interaction between instructors and students requires the students to be more self-disciplined in their learning. The student who cannot cope with such difficulties may suffer from managing time, meeting commitments, and maintaining motivation (McKeachie & Svinicki, 2014, p. 302). Owing to such drawbacks, a new learning environment has emerged in order to reduce and remove online learning weaknesses. In this sense, in order to alleviate the drawbacks and concerns of an online learning

environment, Chou and Chou (2011) conceived the blended learning environment as a "promising alternative learning environment" (p. 464). This new approach has widely been cited as an effective alternative learning approach (Chou & Chou, 2011; Garrison & Kanuka, 2004; Graham, 2006; Wu, Tennyson, & Hsia, 2010).

The trend toward blended learning is embraced by most researchers as one of the most popular instructional approaches (Chou & Chou, 2011). Supporters of blended learning have realized that although face-to-face learning cannot be replaced by online education (Bonk & Graham, 2006; Osguthorpe & Graham, 2003), blended learning has substituted for online learning as an effective alternative learning environment to meet the need of students in higher education (Hijazi, Crowley, Smith, & Shaffer, 2006). Garrison and Kanuka (2004) claimed that blended learning has massive versatility to improve effective and efficient learning experiences, and support meaningful learning outcomes.

It is imperative to consider the potential benefits of blended learning including that it provides flexible scheduling and is learner-centered. Therefore, while providing effective learning opportunities to enhance the quality of learning and teaching activities, the need of students can be met by promoting strong student engagement and satisfaction (Bonk & Graham, 2006; Graham, 2006). In this sense, several different definitions of blended learning can be found. The widely accepted definition of blended learning is combining the best features of face-to-face learning with the best features of online learning (Garrison & Kanuka, 2004; Osguthorpe & Graham, 2003). This perspective reflects the foundation of the working definition of this study. An example of an effective learning environment can be designed as a blended learning environment in which the students can exploit different appropriate traditional and online technological resources, under guidance of the instructors inside and outside of the classroom.

Blended learning is considered the ultimate level in online learning because of its benefits (Usta & Mahiroglu, 2008). One of the most significant benefits is its potential to create, manage, and expand interactive and collaborative learning environments (Graham 2006). A plethora of appropriate resources, tools, and learning materials in online learning can be adapted to traditional learning in response to construct interactive and collaborative blended learning environments. Such learning environments facilitate interaction between instructor-student and student-student by means of computer-supported collaboration, social networks, virtual communities, and so on (Graham 2006). For instance, students can find opportunities to ask questions of each other and instructors are able to obtain further clarification about any topics that remain unclear in face-to-face setting (Hijazi et al., 2006). In this sense, the instructor becomes a designer and a facilitator who creates an effective blended learning environment, in which the students are engaged in learning activities by collaboratively communicating with each other. The importance of student interaction toward contributing to student learning performance in blended learning has been revealed by several studies (Chou & Chou, 2011).

Specifically, it is arguably the assertion that the use of blended learning approaches has great potential to positively impact student satisfaction. Several studies have shown that the adoption of a blended learning approach improves student satisfaction (Bradley et al., 2007; Drysdale, Graham, Spring, & Halverson 2013; Halverson, Graham, Spring, Drysdale, & Henrie 2014). For instance, Woltering, Herrler, Spitzer, and Spreckelsen (2009) systematically combined online learning and face-to-face classes to increase students' satisfaction in blended problem-based learning (bPBL), and concluded in their study that students' satisfaction achieved significantly higher student ratings in bPBL in comparison with the students' rating in traditional problem-based learning. However, Banerjee (2011) indicates that "student satisfaction with blended learning

depends largely on the challenges presented by the subject matter, the degree to which self-directed learning and problem solving are required, and the effectiveness of the chosen pedagogies by which face-to-face and online methods are combined" (p. 8). In this case, the importance of effective and efficient design and implementation of blended learning is explicitly noticeable.

Statement of the Problem

Designing blended learning is an attempt to take advantage of the strengths of traditional and online learning by consolidating both practices into one learning environment (Graham & Dziuban, 2008; Osguthorpe & Graham, 2003). To take advantage of the best features of both practices depends on how the components of the best practices of online learning and traditional learning complement each other. Poorly designed materials hinder constructing an effective blended learning environment even if the best features of the traditional learning are employed. Thus, successful design and implementation of blended learning hinge greatly on the instructors who play the more complicated role (Comas-Quinn, 2011). The balance between online and face-to-face features can be employed according to the instructional goals, student characteristics, instructor background, and online resources (Osguthorpe & Graham, 2003). However, the instructors experience challenges while designing and implementing an effective blended learning environment (Jokinen & Mikkonen, 2013). For instance, the transition from being accustomed to a face-to-face learning course to a blended learning course requires tailored course content and the adoption of new tools, which can be challenging for instructors (Napier, Dekhane, & Smith, 2011). Also, Kanuka and Garrison (2004) stated that blended learning generates "daunting challenges" in the design process because of its "implementation with challenge of virtually limitless design possibilities and applicability to so many contexts" (p. 96).

Purpose and Research Questions

The purpose of this design-based research study was to determine what elements were needed to assist two higher education instructors inexperienced in designing and teaching a blended learning course to successfully design and implement it, and reveal how this blended learning course affected student satisfaction. In accordance with the purpose of this study, these research questions guided the study:

1. What practices are associated with making a blended learning course effective and efficient?
2. What are the instructors' perceptions about their first experience of teaching a blended learning course?
3. How does the blended learning course affect student satisfaction?
4. Does the iterative process of this design-based research study improve the effectiveness and efficiency of a blended learning course throughout the semester?

The specific outline of this design-based research study was to (a) determine appropriate technological processes and resources to employ in a blended learning course; (b) determine the instructors' opinions on creating an effective and efficient blended learning course through the semester; (c) determine if the use of strategies in blended learning meets the students' needs, which results in a positive impact on students' satisfaction; (d) determine if the evolving strategies fed by empirical studies, theories, and practices have a strong potential to design an effective and efficient blended learning course overall. The intent of this study was to lead the inexperienced higher education instructors through having a strong rapport to be able to design and teach a successful and ideal blended learning course, in which students will be motivated to learn.

Theoretical Constructs

This study was grounded in constructivist design theory, cognitive learning theory (especially information processing theory), and ARCS motivational design theory. The purpose of this study was mainly based on constructivist design theory, which argues that "knowledge is individually constructed and often unique to each person" (Richey, Klein, & Tracey, 2011, p. 129). Wilson (2012) based on the writing of several researchers (Dunlap & Grabinger, 1996; Merrill, 1991; Savery & Duffy, 1996; and Wilson, Osman-Jouchoux, & Teslow, 1995) indicated the tenets of a constructivist orientation are as follows: a) Learning is an active process of meaning-making gained in and through our experience and interactions with the world. b) Learning opportunities arise as people encounter cognitive conflict, challenge, or puzzlement, and through naturally occurring as well as planned problem-solving activities. c) Learning is a social activity involving collaboration, negotiation, and participation in authentic practices of communities. d) Where possible, reflection, assessment, and feedback should be embedded "naturally" within learning activities. e) Learners should take primary responsibility for their learning and "own" the process as far as possible (p.45).

Tenets of constructivist design theory can be seen in a desired blended learning environment. Empirical studies reveal the strengths of a desired blended learning environment as creating an interactive and collaborative learning environment, in which students can be active learners in authentic practices of communities by discussing issues, thinking critically, and solving real life problems under the guidance of instructors. Particularly, the use of the blackboard system (content management system) for delivering the online content in this study, had the power to provide quality online content and a collaborative and interactive learning environment for

students. The foundation of using applications in a course management system is based on collaborative learning (Tuzi, 2007).

Furthermore, this study was based on cognitive learning theory, which focused on explaining internal mental functions through the scientific method. Internal mental functions are based on "how individuals obtain, process, and use information" (Richey et al., 2011, p.56). The learner's mental processes are significant factors for the explanation of learning, and the ways that "learners use their memory and thought processes to generate strategies as well as store and manipulate mental representation and ideas" (Robinson, Molenda, & Rezabek, 2008, p.25).

For this study, it was necessary to provide extensive scaffolding for facilitating cognitive learning processes. Also, while designing a blended learning environment, it was taken into account to avoid placing extra burden on working memory and obstructing storage in long-term memory processes. For instance, in order to consider facilitating cognitive learning processes, Mayer (2001)'s multimedia principles such as Multimedia Principle (an e-learning course should include words and graphics rather than words alone) for how to design, develop, and deliver e-learning instruction were suitable to utilize.

Lastly, this study employed ARCS motivational design theory. It is a systematic approach that consists of four fundamental and influential factors (Attention, Relevance, Confidence and Satisfaction) in the motivation to learn (Keller, 2010, p.46). The importance of the ARCS model for this study was that it required system thinking and a systematic problem-solving process that assisted me as a designer to progress from learner analysis to solution design in an iterative manner, as this design-based research study required enhancement of research practices through iterative analysis, design, development, and implementation in a systematic but flexible way in real-world settings (Wang & Hannafin, 2005).

Definitions and Key Terms used in the Study

ARCS Model. Keller (2010) explains the model as "understanding of all the factors that influence student motivation, and determining what kinds of motivational strategies to use, how many to use, or how to design them into the lesson" (p. 44). "A" stands for attention explained as "capturing the interest of learners; stimulating the curiosity to learn" (Keller, 2010, p. 45). "R" stands for relevance explained as "meeting the personal needs/goals of the learner to affect a positive attitude" (Keller, 2010, p. 45). "C" stands for confidence explained as "helping the learners believe/feel that they will succeed and control their success" (Keller, 2010, p. 45). "S" stands for satisfaction explained as "reinforcing accomplishment with rewards (internal and external)" (Keller, 2010, p. 45).

Blended Learning (Hyrib Learning). Blended learning is defined as the rigorous combination of the best features of face-to-face learning with the best features of online learning (Bonk & Graham, 2006; Garrison & Kanuka, 2004; Graham, 2006).

Content Management System (CMS). EDUCAUSE Evolving Technologies Committee (2003, p. 1) explains CMS as "providing an instructor with a set of tools and a framework that allows the relatively easy creation of online course content and the subsequent teaching and management of that course including various interactions with students taking the course"

Design Thinking. Design thinking is the "analytic and creative process that engages a person in opportunities to experiment, create and prototype models, gather feedback, and redesign" (Razzouk & Shute, 2012, p. 330).

Instructional Design. Instructional design is the "science and art of creating detailed specifications for the development, evaluation, and maintenance of situations which facilitate learning and performance" (Richey et al., 2011, p. 3).

Mobile Learning. Geddes (2004) defines mobile learning as "the acquisition of any knowledge and skill through using mobile technology, anywhere, anytime, that results in an alteration in behavior" (p. 1).

Online Learning. Moore and Kearsley (2011) defines online learning as "teaching and planned learning in which teaching normally occurs in a different place from learning, requiring communication through technologies as well as special institutional organization (p. 2).

Summary

The design of a blended learning course for an inexperienced instructor has been neglected while the benefits of blended learning has been discussed in the literature. This study, on the other hand, examined the ways in which a desired blended learning course could be designed and implemented through the course of a semester. This study attempted to address four overarching questions: (1) What practices are associated with making a blended learning course effective and efficient, (2) What are the instructors' perceptions about their first experience of teaching a blended learning course, (3) How does the blended learning course affect students' satisfaction, (4) Does the iterative process of this design-based research study improve the effectiveness and efficiency of a blended learning course throughout the semester?

The conceptual framework for this study included constructivist design theory, cognitive learning theory (especially information processing theory), and ARCS motivational design theory in order to guide the multiple-case research study. In this eclectic framework, an optimal blended learning course was created through continuous cycles of design, enactment, analysis, and redesign. A review of the pertinent definitions and key terminology was discussed previously. A review of this study's relevant literature will be discussed in the next chapter of this dissertation.

CHAPTER 2 LITERATURE REVIEW

Blended Learning

Graham (2006) identified and categorized three current definitions of blended learning in the literature. First, according to Singh and Reed (2001) and Thomson (2002), blended learning can be defined as a combination of instructional methods (as in cited Graham et al., 2005). Driscoll (2002) pointed out that one "can combine various pedagogical approaches (e.g., constructivism, behaviorism, cognitivism) to produce an optimal learning outcome with or without instructional technology" (p. 1). However, this point of view indicates an eclectic perspective rather than mostly cited definition of blended learning as Robinson et al. (2008) defined an eclectic perspective, "combining principles from different theories, may provide a synthesis that serves well in practice" (p. 38). Second, according to Driscoll (2002) and Rossett (2002), blended learning can be defined as a combination of instructional modalities or delivery media (as in cited Graham et al., 2005). However, Graham (2006) identified the problem of this definition as so broadly encompassing "virtually all learning system" (p. 4). Moreover, technology enhanced instruction without reduction in face-to-face contact time, and online instruction with optional face-to-face contact cannot be considered as a blended learning that represents an explicit distinction in comparison with them (Garrison & Kanuka, 2004; Graham, Woodfield, & Harrison, 2013). Lastly, blended learning can be defined as a combination of online and face-to-face instruction (Reay, 2001; Rooney, 2003; Sands, 2002; Ward & LaBranche, 2003).

According to Graham (2006), the last perspective more exactly mirrors the historical emergence of blended learning approaches. From this commonly acceptable point of view, blended learning is the rigorous combination of the best features of face-to-face learning with the best features of online learning (Bonk & Graham, 2006; Garrison & Kanuka, 2004; Graham, 2006;

Graham et al., 2005; Osguthorpe & Graham, 2003). In this sense, an instructor can come together with learners for face-to-face instruction, and they can employ a plethora of technologies and delivery methods for online instruction as well. The strengths and weaknesses of both face-to-face and online learning should accurately be understood before consolidating both learning environments into one learning environment. It is an attempt to seek out best practices in order to take full advantage of the strengths of each environment, and avoid their weaknesses even though there are inherent weaknesses in both learning environments (Graham, 2006). Therefore, blended learning is not a straightforward approach, although it can be a potential remedy for facilitating student performance and improving their learning (O'Connor, Mortimer & Bond, 2011).

The instructor should ensure that a blended learning environment is comprised of the strengths of face-to-face and online instruction, and none of the weaknesses of each type of learning, to serve for promoting student learning as its intended purpose (Osguthorpe & Graham, 2003). In other words, "the core issue and argument is such that, when we have solid understandings of the properties of the Internet, as well as knowledge of how to effectively integrate Internet technology with the most desirable and valued characteristics of face-to-face learning experiences, a quantum shift occurs in terms of the nature and quality of the educational experience" (Garrison & Kanuka, 2004, p. 97).

Furthermore, the components of the best practices of face-to-face and online learning should complement each other. Osguthorpe and Graham (2003) stated that the determination of the degree to which face-to-face and online components are used hinges on the nature of the instructional goals, student characteristics, instructor background, and online resources. Figure 1 demonstrates some types of mixed learning environments that can be formed. Blend-1 and Blend-2 are desirable examples of the blended learning environments because of involving only the

strengths of face-to-face and online learning environment. However, Blend-3 is an undesirable blended learning environment because it involves some weaknesses of each type of learning environment, although it involves the strengths of face-to-face and an online learning environment at the same time.

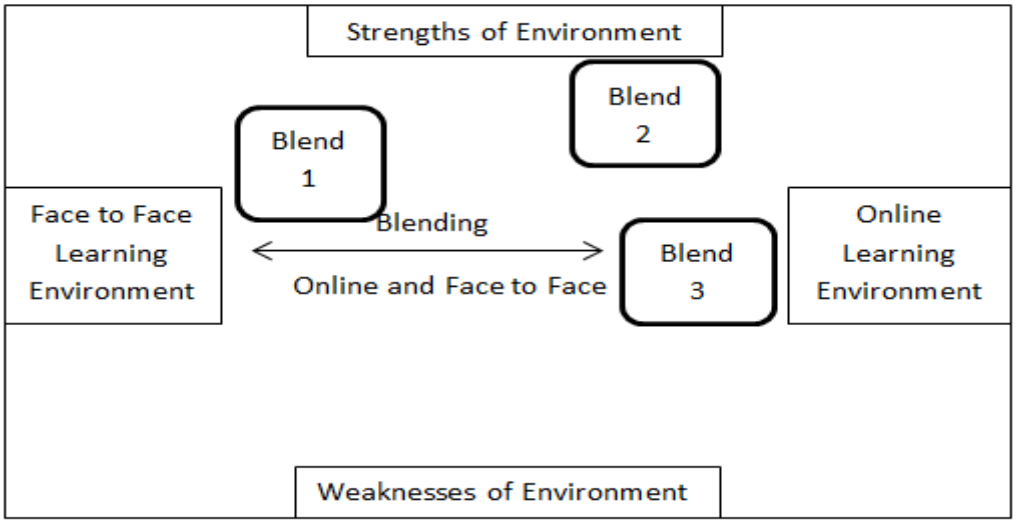

Figure 1 Blending the Strengths of Online and Face to Face Learning Environment. Adapted from "Blended learning environments: definitions and directions," by R. T. Osguthorpe, and C. R. Graham, 2003, Quarterly Review of Distance Education, 4(3), 227-233.

Benefits of Blended Learning

One of the most appealing promises of blended learning is to "maximize the benefits of both face-to face and online methods—using the web for what it does best and using class time for what it does best" (Osguthorpe & Graham, 2003, p. 227). In this sense, Alonso, Lopez, Manrique and Vines (2005) considered blended learning as an efficient teaching model that motivates students to master a course by combining self-paced learning, online learning, and face-to-face learning.

Osguthorpe and Graham (2003) identified six benefits for instructors to design blended learning: pedagogical richness, access to knowledge, social interaction, personal agency, cost effectiveness, and ease of revision. In parallel with that, Graham et al. (2005) indicated three

reasons of why instructors choose blended learning: improved pedagogy, increased access and flexibility, and increased cost-effectiveness. For instance, several institutional leaders consider blended learning as a way to overcome significant institutional challenges such as a period of rapid growth, lack of physical infrastructure, and desire for increased flexibility for faculty and students, cost reduction, and increased access to more students, while encouraging the faculty to take advantage of blended learning to improve student learning (Graham, et al., 2013).

First, the use of effective pedagogical approaches is commonly a critical factor why instructors choose blended learning (Graham, 2006). A plethora of appropriate resources, tools, and learning materials in online learning can be adapted to traditional learning in response to construct interactive and collaborative blended learning environments. Such learning environments facilitate interaction between instructor-student and student-student by means of computer-supported collaboration, social networks, virtual communities, and so on (Graham 2006). Thus, blended learning has been considered as an interactive learning environment in which instructors can apply efficient active learning strategies, peer-to-peer learning strategies and student-centered strategies (Garrison & Kanuka, 2004; Hoic-Bozic et al., 2009; Twigg, 2003). Rovai and Jordan (2004) stated that blended learning could be a potential remedy in response to a desire to create student-centered classrooms and promote a sense of community among students. In parallel with that, Picciano (2013) pointed out that the use of blended learning provides online tools that can be employed to engage students in learning group activities by creating collaborative learning.

For instance, Hoic –Bozic, et al. (2009) created a blended e-learning model, which is based on a mixture of collaborative learning, problem-based learning (PBL) and independent learning. The model was constituted by combining a face-to-face and online learning in which they use a

learning management system (LMS) named adaptive hypermedia courseware (AHyCo) that is based on constructivist and cognitivist elements. Data were collected by means of a survey to reveal senior students' satisfaction with the pedagogical approach in the undergraduate program in a Mathematics and Information Science major at the Department of Information Science, Faculty of Arts and Sciences, University of Rijeka, Rijeka, Croatia. The results of the study showed that students were satisfied with the pedagogical approach. Also, their academic achievement was better than expected because the students' academic achievement was higher than those who previously took the course taught in only traditional manner. Lastly, the dropout rate was significantly reduced. A similar study conducted by So and Brush (2008) revealed students' perception of collaborative learning, social presence, and satisfaction by investigating psychological and transactional issues related to the relationship of three variables in a blended learning environment. The important point is that the collaborative learning project was designed as an authentic learning experience. The student perception questionnaire and face-to-face interviews were conducted to collect data from 48 graduate students. The results demonstrated that students are more satisfied when being involved in high levels of collaborative learning and their social presence increased. Generally, students' self-motivation was positively affected by a feeling of connection because they enjoyed working with team members and obtained a high grade on the group project.

Another study conducted by Liu and Yu (2012) investigated student' English learning efficacy and efficiency by looking into the relationship between student learning motivations and student learning strategies in the blended EFL (English as a Foreign Language) learning environments. Data was collected by 540 questionnaires distributed to non-English majored students who learned English in a blended learning environment. The result of the study indicated

that student learning motivations had a strong positive relation with student learning strategies. Furthermore, when the students perceived the instructor to be supportive in the blended learning environment, their motivation level was increased and they became highly motivated to use diverse learning strategies to improve their English learning efficiency. This also helped them get better final examination scores.

In addition to these studies, Donnelly (2010) explored the concept and practice of interaction with people (peer learners and instructors) and a blended problem-based learning experience for academic professional development in higher education by analyzing specific aspects of interaction to provide research-based information. Because interaction in a blended learning experience is discerned as potential to improve quality of active and participative learning and increase motivation, positive attitudes towards learning makes interaction a key value proposition. A qualitative approach was used to collect face-to-face and online observational data from 17 participants of academic staff in a two-year study on a blended problem-based learning module and analyze participants' current thinking and practice on the potential of interaction in experiences of blended problem-based learning approach. The results demonstrated that using the online interaction increased the learner readiness for in-class tutorial activity, ongoing positive peer contributions, positive attitude toward learning that enhances transferability of knowledge. Maintaining invaluable interaction between students and the instructor enabled some participants to achieve a level of criticality in their learning.

Second, increased student accessibility and flexibility are two key factors which blended learning can provide. Most students desire a flexible learning environment where they can have access to knowledge, social interaction, and human touch. Therefore, blended learning is a unique opportunity for balance between flexible learning alternatives and human interactive experience

(Graham, 2006). The increased various forms of interaction are emphasized as a key role in blended learning (Kuo, Belland, Schroder & Walker, 2014). For instance, Wu et al. (2010) pointed out that interaction is an important determinant that has positive correlation with student learning outcome, and blended learning has great potential to positively increase student-instructor and student-student interactions. In addition to that, instructors can extract valuable information from student interactions to see whether they made progress in their learning (Donnelly, 2010).

To illustrate, a research conducted by Al-Ani (2013) examined how using Moodle (a content management system) in a blended learning environment affects students' achievement, and motivation among a sample of 283 students from all colleges at Sultan Qaboos University in Oman. The finding demonstrated that using Moodle in the blended learning environment increases student achievement and self-regulated skills through rich communicative blended learning activities. Also, the researcher indicated that the flexibility of the blended learning environment increases students' motivation and their desire to learn in order to meet their achievement goals. In parallel with the results of this study, Seluakumaran, Jusof, Ismail, and Husain (2011) used Moodle in blended learning to facilitate their face-to-face teaching of physiology for a group of first-year students in the Bachelor of Medicine and Bachelor of Surgery program, in the Faculty of Medicine at the University of Malaya. Their findings revealed that the group of students who used the Moodle received significantly higher scores in the final physiology exam compared with the previous class that did not use Moodle. Moreover, the researchers indicated that implementation of Moodle in blended learning as a complementary e-learning tool could increase their motivation to study.

Another study conducted by Osgerby (2013) examined undergraduate and postgraduate students' perceptions about the introduction of a blended learning (BL) approach after the

University of Winchester in the UK redesigned Virtual Learning Environments (VLEs which provide the opportunity to deliver blended learning approaches) for a variety of accounting and financial management modules in 2008-2009. The findings showed that students had a positive attitude to an organized, flexible and well-resourced BL approach that required student interaction and collaboration. However, some students showed their reluctance to use the VLE for group work. Overall, the results showed that the students were positive about developing knowledge and skills in the BL environment. Lastly, Duque et al. (2013) implemented a blended learning approach which mixes web-based modules providing self-reflection opportunities, access to technology, interactive learning, frequent interaction and eliciting regular feedback, and person-to-person interactions providing a hands-on learning experience and more exposure to patients in order to assess measure effectiveness of the learning environment for teaching geriatric medicine in a medical school. The results revealed that an interactive blended learning system provided a rich and effective learning experience. First, students' perception of geriatric medicine was positively changed and they showed their interest in this medical subspecialty, and second students elicited plenty of learning experiences that resulted in a significant improvement in their knowledge.

One of the major benefits is cost effectiveness in blended learning. Blended learning may offer cost reduction by cutting funding for physical infrastructure such as reducing time in class and by improving scheduling efficiencies such as decreasing full-time instructor involvement due to the possibility of replacing them with a part-time instructor (Osguthorpe & Graham, 2003). Twigg (2003) investigated the results of institutional redesigning instruction using technology and found that all thirty of the institutions researched benefited from technology by reducing costs by about 40 percent on average, with a range of 20 percent to 84 percent cost reduction. He stated that blended learning might enhance the quality of student learning and reduce instructional cost.

In conclusion, blended learning enables students to benefit from online self-paced learning to optimize technological resources, face-to-face learning for learning by doing, and online learning to support students for transference of the learning (Graham, 2006).

Designing Blended Learning

Although the design of blended learning is supposedly an easy activity, the activity substantially requires problem-solving skills (Hew & Cheung, 2014). Rossett et al. (2003) stated that there is no recipe for designing blended learning to go beyond the boundaries of the traditional classroom, and identified six factors to design blended learning for workplaces, which include stability of content, time availability, human interaction, budget size, learning resources, and nature of activities, and the learners' situation. Hew and Cheung (2014) cited Foo's (2014) blended learning design framework that was constituted by analysis of an in-depth interview with experienced blended learning course instructors for educational settings. Hoic-Bozic et al. (2009) identified linear sequence of a designing blended learning. Although the activities are clearly defined in the framework, it is not as strong and comprehensive as Foo's (2014) blended learning design framework to follow because of its linearity. When design frameworks are carefully contemplated to employ for designing a blended learning course, Foo (2014)'s framework is appropriate to follow even though it lacks providing evidence-based practice as Hew and Cheung (2014) indicated. However, it can be overcome by supporting the framework with a literature review.

According to Hew and Cheung (2014), the framework begins the design of blended learning with analysis of desired learning goals and learners. In order to clearly determine what students will understand, and what they will be able to do at the end of the instruction, the design starts with desired learning goals. Furthermore, conducting learner analysis provides

understanding of what the intended target students are in terms of general characteristics (e.g., gender, age, and so on), specific characteristics (e.g. prerequisite skills), learning preferences and who they are in terms of motivation, attitude, expectations and vocational aspirations (Stefaniak & Baaki, 2013). Moreover, the analysis provides understanding of students' preferences and characteristics related to learning technologies towards how diverse generations of students can be taught or may tend to learn (Zhang & Bonk, 2010). At the second phase, Hew and Cheung (2014) analyze key pre-conditions to determine the readiness of designing blended learning, which includes institutional support, infrastructure readiness, content readiness, instructor readiness and student readiness.

In terms of institutional support, there is a need for clear institutional policy supporting blended learning (Garrison & Kanuka, 2004) and institutions need to ensure that adequate support services are being provided for the required training on technological issues and blended learning as well (VanDerLinden, 2014). Moreover, Garrison and Vaughan (2008) specified that institutions can launch programs (e.g. seminars and technology workshops) for faculty improvement to assist them to enhance their teaching responsibilities and their knowledge and skills for integration of technology into their teaching practices (p. 50). Thus, not only faculty can improve their skills on how to employ a technique or software application in their teaching practices, but they can also share their experiences, ideas, and concerns about implications of using educational technology (Garrison & Vaughan, 2008, p. 50).

The mandatory physical and technological infrastructure play a key role in designing blended learning to facilitate the learning process instead of hindering it. (Garrison & Kanuka, 2004; Niemiec & Otte, 2009). For instance, Powell (2011) as a result of his interviews found out that one of the biggest obstacles to e-learning implementation was a lack of technological

infrastructure in New Zealand's secondary schools. Another comprehensive study conducted by Porter, Graham, Bodily, and Sandberg (2016) surveyed 214 faculty and interviewed 39 faculty. The results of the study showed that one of the key factors for successful implementation of blended learning is the establishment of an adequate physical and technological infrastructure because when consistently functioning infrastructure fails, it causes hindering course work and engagement, which results in distracting students' attention.

The instructor needs to have certain level competencies to use and manage online instruction (Smith, 2005). Setting up a well-organized course can be an example of such competency. However, instructors need to improve their capabilities to deal with complex set of roles and responsibilities so that they can create a quality-learning environment (Garrison & Vaughan, 2008, p. 49). Also, the instructor may need to be able to carry the burden of designing learning in a blended learning course (VanDerLinden, 2014). In this regard, instructors need to have certain capability to use pedagogical approaches (specifically active learning strategies), and design and implement a blended learning course. Otherwise, it is completely futile to assume that any blended learning course results in better learning without planning design of blended learning in detail (Glazer, 2011). Moreover, the instructor can prepare and transfer course content into a blended learning environment so course content will be ready for students. However, course content readiness does not mean delivering old content with a new technology (Garrison & Kanuka, 2004). Conversely, contemporary course content needs to be translated for online delivery according to how it can effectively be presented and how this presentation type promotes learning (Smith, 2005).

Although it is widely cited that the newer generation (digital native) of students have ubiquitous a variety of digital technology and prefer to use them in their learning (Chou & Chou,

2011; Zhang & Bonk, 2010), taking into account students' ability and access to use digital technology is one of the prerequisite readiness dimensions to the implementation of blended learning. Students need to possess adequate IT skills (Smith, 2005) because Bichelmeyer et al. (2006) showed that the use of instructional materials could already be difficult and challenging for students. Also, students need to have accessibility to a computer with the necessary software and an Internet connection (Garrison & Kanuka, 2004). According to the requirement of using online resources, they may need to have mobile devices with the necessary software and an Internet connection. Also, students may need technological support services in case of their technological problems (Garrison & Kanuka, 2004).

If the overall assessment satisfies the pre-conditions, designing blended learning can continue to the next phase. In this phase, it is determined which pedagogical approaches and instructional strategies are used. Osguthorpe and Graham (2003) claim that pedagogical desire of blended learning is to maximize the benefits of both face-to face and online instructions. The desire requires shifts in the role of students from a passive, note-taking role to active learners, the role of the instructor from being a lecturer to guiding students, and from instructor-centered to a student-centered environment (Hoic-Bozic et al., 2009; Twigg, 2003). The design of an interactive learning environment with providing constant feedback is an example of such a student-centered environment (Twigg, 2003). In this sense, blended learning has a great potential to create and expand interactive learning environments by facilitating instructor-teacher and student-student interactions (Graham, 2006). Blended learning integrates technological advances in the interactional applications into traditional learning to tailor learning to meet students' needs (Thorne, 2003, p.104). Thus, the instructor can enable collaborative and cooperative learning that encourages, as well as empowers students to be active participants.

In addition, the effect of using blended learning on student learning outcomes is very important because the most cited research underscored how students' learning outcome can be influenced in blended learning (Halverson, Graham, Spring & Drysdale, 2012). Delialioglu and Yildirim (2007) examined students' perceptions about the effective dimensions of interactive learning in a blended learning course. They interviewed with 25 university students who enrolled in the Computer Networks and Communications end of the study, which lasted 14 weeks. The effective dimensions of interactive learning including pedagogical philosophy, learning theory, goal orientation, task orientation, source of motivation, teacher role, metacognitive support, collaborative learning, and structural flexibility were revealed by the results of the interviews. The results showed that the pedagogical philosophy of the blended course, which was a mixture of cognitivist and constructivist elements was beneficial for learning. Also, another influential point to successful learning was well-designed course website according to students. In parallel with this study, Wu et al. (2010) proposed a research model based on the social cognitive theory to investigate the primary determinants affecting student-learning satisfaction in a blended e-learning system (BELS) environment by surveying 212 participants. According to theoretical research base, three primary dimensions that were learners' cognitive beliefs (self-efficacy and performance expectations), technological environment (system functionality and content feature), and social environment (interaction and learning climate) were analyzed to see how they affect student-learning satisfaction in BELS environment. The result showed that performance expectations and learning climate are two strong determinants for learning satisfaction and students' interaction has a significant positive influence on both performance expectations and learning climate in BELS environment.

Another study conducted by Du and Wu (2013) investigated whether student-instructor and student-student interactions improve student performance and satisfaction in blended learning. The results of the study showed that students were highly satisfied with human interactions although they didn't find a significant relation between human interaction and student performance. As a result, determination of pedagogical approach and selection of instructional strategies are vital to create learning environments of this type. Lastly, Chang and Chen (2015) examined the impact of ARCS model based blended learning environment on the students' motivation for learning in higher education. An online questionnaire survey was used to collect data from 292 participants and in-depth interviews about motivational learning were conducted with students whose academic achievement was very high and very poor in terms of test score. The results of the study revealed that when students are encouraged to be confident to take the responsibility of controlling their learning and the use of digital materials capture students' interest and curiosity to learn, and meet students' needs and goals, students' perception of a quality learning environment is fostered, students' satisfaction is increased, and a desired learning outcome can be reached in a blended learning environment.

After determining pedagogical approach and instructional strategies, all elements of the online and face-to-face component and course resources are consolidated in an initial blended learning model. As it is indicated earlier in this paper, the nature of the instructional goals, student characteristics, instructor background, and online resources should be taken into account; to put everything in blended learning. Each phase also assists the instructor in integrating online and face-to-face components, as well as course resources into blended learning models in order to attain course-learning goals.

Twigg (2003) identifies five distinct blended learning models that vary from completely face-to-face, to completely online instruction in higher education. These models are supplemental, replacement, emporium, fully online, and buffet. The supplemental model integrates technology based out-of-class activities such as online quizzes and instructional video lectures into traditional learning. The replacement model shifts particular class meeting time from face-to-face instruction to online instruction. The emporium model replaces all class meeting with a learning resource center in which online materials and personalized assistance are provided according to student's needs. The fully online model eliminates all face-to-face instruction and offers all learning activities online under the instructor's supervision. Finally, the buffet model offers various learning choices including lectures, individual discovery laboratories (in-class and Web-based), team/group discovery laboratories, individual and group review (both live and remote), small-group study sessions, videos, remedial/prerequisite/ procedure training modules, contacts for study groups, oral and written presentations, active large-group problem solving, homework assignments (GTA graded or self-graded), and individual and group projects. Graham, et al. (2013) identify various course delivery modalities from traditional methods and fully online. Although Twigg (2003) categorizes five different course delivery modalities, they argued that traditional instruction with technology enhanced courses and online instruction with optional face-to-face instruction may not be considered as a blended course design as shown in Figure 2. However, the straight way to design a blended learning course depends entirely on the effectiveness of student involvement.

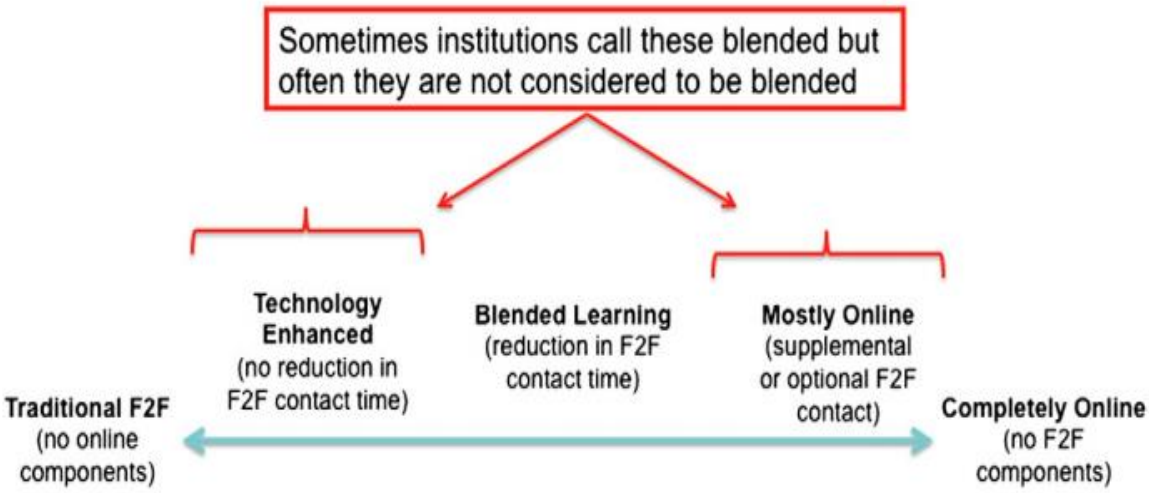

Figure 2 Spectrum of course-delivery modalities in higher education. Adapted from "A framework for institutional adoption and implementation of blended learning in higher education," by C. R. Graham, W. Woodfield,and J. B. Harrison, 2013, The internet and higher education, 18, p. 5.

Challenges of Blended Learning

While blended learning brings new opportunities and innovative approaches to learning environments, it may cause new challenges as well. Jokinen and Mikkonen (2013) stated that instructors should be aware of challenges of blended learning such as preparing appropriate content and alleviating students' reluctance to accept a new learning approach while designing and implementing it.

Ocak (2011) identified the three groups of challenges that instructors may face when creating blended learning. The first group of challenges consists of complexity of the instruction, lack of planning and organization, lack of effective communication, and spending more time which are examined under the instructional processes. For instance, while instructors need to devote their time to interaction with students via online part of blended learning, particularly the instructors who just begin to teach their lesson in blended learning may think that they do not need to communicate with students to the same topic twice through online instruction (Nakazawa, 2009).

However, an instructor can enable students to deeply comprehend any topics by allowing students to keep asking questions to clarify the topics which remained unclear in face-to-face instruction (Hijazi et al., 2006).

For instance, Baehr (2012) synthesized the latest research and best practices. The findings indicated that it is important to select appropriate technology and media forms by assessing their usefulness based on a set of factors, including richness, experience, perception, and individual recommendation. The complexity of blended learning springs from blending spatial (distributed and collocated) and temporal (asynchronous and synchronous) components to augment collaborative knowledge sharing. To illustrate, it is necessary to constitute virtual learning environment in which students can be an active participant and take advantage of new practices in order to increase knowledge retention and social presence by means of suitable communication tools for facilitating collaborative knowledge sharing. Tang (2013) explored the use of Moodle in blended learning environment for ESL (English as a Second Language) students. In order to provide self-regulated learning and collaborative learning in the blended learning environment, students should be guided to take advantage of integration of the online learning with face-to-face learning. However, results showed that a blended learning approach has its difficulties such as students' willingness to devote their time to be active learners, and instructors' commitment to devote their time to monitor students in both learning environments.

Another study conducted by Shroff and Vogel (2010) investigated whether a blended learning approach has a positive impact on students' interest in a management of information systems course. Online discussions versus face-to-face discussions were analyzed to see whether there is a significant effect of blended learning (using online discussion through blackboard) on perceived individual student interest. The findings of this quasi-experimental study showed that

although the instructor observed that students were willing to be involved in online textual dialogue and online discussions took place more in the comparison with face-to-face discussions, there was no statistical difference in students' perception of interest in both the online and face-to-face discussions. Moreover, Gerber, Grund and Grote (2007) explored the nature of instructor and student online communication and collaboration activities in a blended learning course to find out the relation of the online activities and student learning performance by systematically analyzing content and conducting survey methods. The findings demonstrated that even though the quantity of instructor' activity didn't positively influence on students learning performance, the instructor' activities to maintain the interest, motivation and engagement of the students had a positive impact on students learning performance when closely examining the nature of different activities. Also, although the quantity of students' activity influenced student learning performance, the nature of student messages was more important than the amount of student messages.

The second group of challenges consists of lack of institutional support and changing roles that are examined under the community concern. One of the most intimidating challenges is whether instructors embrace new roles when they realize benefits of the new learning environment. Ocak (2011) stated that changing instructor's role such as modifying strategies and activities, and increasing their responsibilities such as addressing serious and complex issues may make instructors unwilling to create a blended learning. Furthermore, professional development orientations, technical and pedagogical support, and incentives should be provided by institutions to help instructors benefit from the use of technology and designing blended learning (Kuo et al., 2014). Otherwise, instructors may be hindered due to a limited institutional support to put blended learning into operation (Jokinen & Mikkonen, 2013). Even if some instructors can overcome barriers to create blended learning, institutional policies, structures, and lack of support restrain

many instructors from designing and implementing blended learning (Graham, Woodfield, & Harrison, 2013). 11 cases of institutional blended learning adoption and implementation were investigated by Porter, Graham, Spring and Welch (2014) and their findings demonstrated that institutional support such as technical and pedagogical training for instructors is key factor to facilitate blended learning adoption and optimize and blended learning implementation.

Delialioglu (2012) explored the difference between the effect of a lecture-based blended learning environment on students' engagement and the effect of a problem-based blended learning environment on students' engagement for 89 junior pre-service computer teachers in a computer networks course. Students' engagement was analyzed by four indicators, which were active learning, total time on task, interaction and level of academic challenges, and course satisfaction. Data was gathered by administering the entry survey and the student engagement survey through online. The results showed that even though active learning and total time on task indicators of student engagement were significantly higher in the problem-based blended learning environment, other indicators (interaction and level of academic challenges, and course satisfaction) were not significant difference between two blended learning environments.

The last group of challenges is difficulty of adoption to new technologies, and lack of electronic means that are examined under the technical issues. Comas-Quinn (2011) introduced instructors' acquisition of the necessary literacies and skills as a key challenge. It is vital to have the necessary technology literacies and skills to employ technological resources in blended learning. In order to acquire necessary technology literacies and skills, Aladejana (2008) claimed that instructors should be required to attend workshops that they are trained to effectively use and incorporate ICT into their courses. Otherwise, it is evidently understandable that if instructors don't have the necessary technical skill, they will encounter problems when they need to access

course materials, engage with course content, and involve students in online content (Toth, Foulger, & Amrein-Beardsley, 2008). Moreover, Ocak (2011) emphasized that making required plans for technology access should be done in advance, otherwise it not wise to expect that students will be able to effectively utilize technological opportunities.

Summary

This research study was designed to aid instructional designers and instructors in higher education to reveal the ways in which how a desired blended learning course can be designed and implemented in a systematic and holistic manner. This literature review explored the identification of blended learning, the potential benefits and challenges of blended learning with empirical studies supporting its benefits and challenges, and a theoretical framework of designing a blended learning environment with empirical studies showing how to teach blended learning courses in this study.

Results of this literature review indicated that although three different definitions of blended learning are cited in the literature, the commonly acceptable definition of blended learning is the meticulous combination of the best features of face-to-face learning with the best features of online learning (Bonk & Graham, 2006; Garrison & Kanuka, 2004; Graham, 2006; Graham et al., 2005; Osguthorpe & Graham, 2003). The combination of face-to-face and online learning provides three remarkable benefits as follows: improved pedagogy, increased access and flexibility, and increased cost-effectiveness (Graham et al., 2005). However, countless design possibilities of a blended learning environment cause intimidating challenges according to Kanuka and Garrison (2004). Ocak (2011) identified the three groups of challenges including instructional processes, community concerns and technical issues. In order to overcome these intimidating challenges and benefit from blended learning, the optimal balance between online and face-to-face

features should be determined according to the instructional goals, student characteristics, instructor background, and online resources (Osguthorpe & Graham, 2003). Finally, this literature review indicated that the activity of designing a blended learning environment intrinsically requires problem-solving skills (Hew & Cheung, 2014) to create a desired and innovative blended learning environment.

CHAPTER 3 METHODOLOGY

Introduction

The purpose of this multiple case design-based research study was to discover what elements were needed to assist higher education instructors inexperienced in teaching a blended learning course to successfully create and enact a blended learning course, to document inexperienced instructors' experiences while designing, implementing and teaching in a blended learning environment, and to reveal how this blended learning course influenced student satisfaction. The goal of the study was to iteratively design, develop, implement, and evaluate a blended learning course based on constructivist design theory, cognitive learning theory, and ARCS motivational design theory by working in close cooperation with inexperienced instructors.

This was a design-based research approach that included the collection of qualitative and quantitative data. Data collection methods included interviews, observations, and surveys to address the following research questions:

1. What practices are associated with making a blended learning course effective and efficient?
2. What are the instructors' perceptions about their first experience of teaching a blended learning course?
3. How does the blended learning course affect student satisfaction?
4. Does the iterative process of this design-based research study improve the effectiveness and efficiency of a blended learning course throughout the semester?

This study attempted to create and extend knowledge about designing, enacting, and teaching a blended learning course from previous literature. Thus, the results of the study had

potential to (a) lead practitioners in the design and implementation of a blended learning environment, (b) direct further research, and (c) provide a deeper insight into the literature.

This chapter describes the study's research method and includes specific information on: (a) rationale for multiple-case design-based research, (b) an overview of the research design, (c) the research participants, (d) the research environment, (e) data collection, (f) data collection instrumentation, and (g) data analysis. It concludes with a brief summary of the study's research methodology. Before conducting this study, I obtained permission from the university's Internal Review Board.

Method

McKenney and Reeves (2014) state that design-based research is not a methodology but "it uses quantitative, qualitative and –probably most often- mixed methods to answer research questions" (p. 133). In this sense, the method of this study was design-based research by applying mixed methods to seek answers for the questions of this study. Design-based research is defined as "a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (Wang and Hannafin, 2005, p. 6).

For this study, it was vital that design-based research provided an opportunity for iterative cycles of design and observation while creating a blended learning environment. Wang and Hannafin (2005) state five characteristics of design-based research including "Pragmatic, Grounded, Interactive, Iterative and Flexible, Integrative and Contextual" (p. 7). This study was pragmatic because the overall goal of the research study was to create a desired blended learning course and find usable solutions to any real-world problems that the instructors faced in the course

while designing, enacting, and teaching it. Thus, the use of this method helped create and extend knowledge about design principles in accordance with grounded theory (Design-Based Research Collective, 2003). In this sense, this method was suitable for this study because the goal of this study pursued developing an effective learning environment in an authentic setting (Sandovel & Bell, 2004).

The design process began by constructing a detailed initial plan in a flexible manner, and I made thoughtful changes while working with the two instructors through the semester when it was necessary to iteratively analyze, design, implement, and redesign (Joseph, 2004; Wang & Hannafin, 2005). Furthermore, mixed research methods were conducted to maximize the objectivity, validity, and applicability of this research (Wang & Hannafin, 2005). The instructors' perceptions and feelings toward developing a learning environment and the contextual factors of it were investigated in order to gain in-depth and comprehensive understanding of how and why the instructors held these perceptions and feelings rather than obtaining *yes* or *no* responses. Lastly, the setting where research was conducted was vital because the principles were extracted from this setting. However, "the findings are more than prescribed activities to be followed by other designers; they transcend the immediate problem setting and context guide designers in both evolving relevant theory and generating new findings" (Wang & Hannafin, 2005, p. 11).

Finally, Wang and Hannafin (2005) describe the researcher's role in design-based research as one where "researchers manage research processes in collaboration with participants, design and implement interventions systematically to refine and improve initial designs, and ultimately seek advance both pragmatic and theoretical aims affecting practice" (p. 6). In this study, I closely and collaboratively worked with the instructors. This good rapport allowed me to improve the

design of the blended learning environment, and apply and refine constructivist and cognitivist principles as well as the ARCS model that affect real life practice.

Research Design

This design-based research study included an exploratory design with collecting quantitative and qualitative data across the course of the study. Collecting quantitative and qualitative data enables researchers to obtain and synthesize data from multiple sources in order to gain an in-depth and comprehensive understanding (Creswell, 1998). This study was carried out in two phases, a quantitative phase and a qualitative phase. The qualitative phase was designed for identifying the need of appropriate technological processes and resources in order to create an optimal blended learning course, and for eliciting feedback on the design and implementation of the blended learning environment from the instructors in order to enhance the effectiveness and efficiency of the blended learning course throughout the semester. The quantitative phase was designed to enhance the use of instructional activities and tools, and to uncover students' satisfaction in the blended learning environment.

This design-based research study was conceptualized and conducted within iterative design activities: a) literature survey and analysis and understanding of the practical problem by closely collaborating with the instructors; b) design and development of intervention within a theoretical framework in a flexible manner; c) implementation of refined intervention within a three-phase formative evaluation feedback loop of iterative redesign, and d) finally, documentation and reflection toward contextual and usable design principles and theories (McKenney & Reeves, 2012; Wang and Hannafin, 2003; Wang and Hannafin, 2005) as illustrated by Figure 3. Also, it was important that the value of this design-based research can be appraised whether its ability improved educational practice (Design-Based Research Collective, 2003).

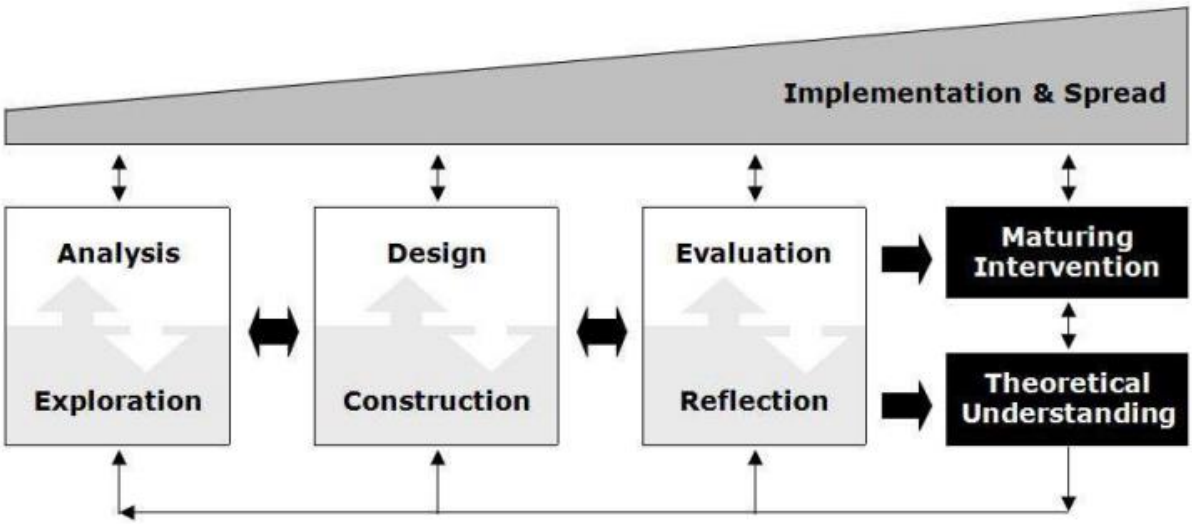

Figure 3 Generic model for design research in education. Adapted from "Conducting educational design research," by S. McKenney, and T. Reeves, 2012, London: Routledge, p. 77

Participants

Purposeful selection method was used to recruit participants for this study. Purposeful selection is a convenient method to collect data for a particular study or research project when a researcher looks for specific individuals who are eager to openly share their experiences (Tongco, 2007). This was the critical step, given the nature of data coming from instructors who were willing to cooperate with me to design an effective blended learning course and gather data because design-based research requires a researcher to closely work with a practitioner. Also, this study could be best conducted by identifying the criteria of purposeful selection because the data sources should have met the specific participation requirements (Patton, 1990). The following set of criteria that an instructor must possess to participate for this study was determined:

- Instructors need to have a moderate level of competency at least to be able to use and manage online instruction (using online components such as sending e-mails, uploading content to the delivery system, and so on and triggering questions, monitoring the students, and leading discussion to the right track in online environment).
- Instructors must be open to improve their IT capabilities.

- Instructors should not be prejudiced against the use of technology inside or outside of classroom settings.
- Instructors' institution should provide the mandatory physical and technological infrastructure to deliver online instruction.

I examined whether an interested instructor was able to meet a brief list of requirements to ensure that each was an appropriate participant for the study after contacting the interested instructors in the College of Education. In this sense, two Psychology instructors were predetermined because they were both willing to work with me and met each criterion. I coded them as Instructor 1 and Instructor 2 in order to keep their identity secret. Instructor 1 is a Professor in Psychology and has been teaching several face-to-face graduate and undergraduate psychology courses for many years. However, Instructor 1 has never taught a blended learning course. Instructor 2 is an Associate Professor in Psychology and has been teaching several face-to-face graduate and undergraduate psychology courses for many years. However, Instructor 2 has never taught a blended learning course. After I enthusiastically stated my purpose of the study to the instructors and kindly asked them whether they would like to work with me for my study, they found the study impressing and potentially beneficial to their courses. As a result, they accepted to closely work with me and I assisted them to transform one of their face-to-face graduate level courses into a blended learning course in the Fall 2016 semester.

Also, there was another type of participant for this study: the students who enrolled in the graduate level Psychology courses taught by the instructors in the Fall 2016 semester. The Instructor 1's class had eleven students consisting of one male and ten female participants and the Instructor 2's class had twenty-three students consisting of two male and twenty-one female participants. These groups of graduate students should meet the following criterion:

- Students need to have a moderate level of competency to be able to attend online instruction (using online components of the course such as sending e-mails, posting threads, conducting video conferences, and so on).

If they didn't meet the criterion, there would be a preliminary meeting to prepare them for a blended learning environment. Furthermore, there were no concerns about the institutional policy for online instruction because these types of concerns had already been taken into consideration while choosing the instructors.

Lastly, I recruited instructional design experts to examine the designed blended learning environment and receive feedback on it. The instructional design experts were recruited from The Office for Teaching & Learning in Wayne State University. This institute is "designed to help instructors prepare to teach in a hybrid or online environment with a strong foundation of hybrid and online course design principles and best practice" (OTL, 2016). Thus, the experts were a perfect fit for the purpose of this study.

Data Collection

This multiple-case design- based study employed qualitative and quantitative collection methods. Qualitative data collection method was used in this multiple-case study to gather data at different times throughout the study. These different times of data collection were referred to as:

Phase 1: From August 19, 2016 to October 7, 2016

Phase 2: From October 7, 2016 to November 11, 2016

Phase 3: From November 11, 2016 to December 16, 2016

During Phase 1, interviews were conducted with the instructors and instructional design experts. The first interview was conducted with each instructor to explore their strengths and weaknesses in using technological tools and their goals of teaching the course. Also, the design and implementation of the blended learning environments was discussed with each instructor.

According to the instructor's feedback on the blended learning environments, each learning environment was redesigned. Then, after determining how to design and implement the blended learning environments, the instructional design experts were requested to judge each learning environment. After eliciting the instructional design experts' feedback, the necessary adjustments were done. Finally, after discussing with each instructor about the last prototype of the learning environments, the final version of each learning environment was designed and implemented. Each instructor was observed while teaching their blended learning course until the next meeting. If an instructor faced any problem, I intervened to solve the problem. Otherwise, the next meeting took place as planned.

During Phase 2, interviews were conducted with the instructors and instructional design experts. The first interview was conducted with each instructor to investigate the strengths and weaknesses of each instructor's online capabilities, and determine what practices were associated with making the implemented a blended learning environment effective and efficient. According to instructor feedback on the learning environments, each learning environment was redesigned. After determining how to design the learning environments, the instructional design experts were requested to appraise each learning environment. After eliciting the instructional design experts' feedback, the necessary adjustments were done and their advice about the learning environments was taken into account. Then, the last prototype of each learning environment was shown to the students and their comments on the learning environments were considered to redesign each learning environment. Final versions of the learning environments were discussed with each instructor and the essential modifications of each learning environment were done. The learning environments were ready to implement. Each instructor was observed while teaching his/her

blended learning course until the next meeting. If an instructor faced any problem, I intervened to solve the problem. Otherwise, the next meeting took place as planned.

During Phase 3, interviews were conducted with each instructor. Their perceptions about their first experience of teaching a blended learning course were asked. Their thoughts about what, why, and how to select, use, and manage appropriate technological processes and resources through the semester were uncovered. Their opinions on designing and implementing effective and efficient blended learning courses through the semester were revealed.

Additionally, a quantitative data collection method was used to gather data at different times throughout the study. A validated Likert satisfaction scale survey was used to collect data on students' satisfaction at the third week of the semester and end of the semester. The result of collected data was compared to determine students' satisfaction on learning in a blended learning environment. Furthermore, a validated Likert material motivation survey was used to collect data at two times throughout the study. The collected data was measured for improvement of using instructional activities and tools.

Quantitative data collection schedule was as follows:

Student prior satisfaction survey: Third week of the term (September 24, 2016)

First material evaluation survey: Fifth week of the term (October 5, 2016)

Second material evaluation survey: Tenth week of the term (November 9, 2016)

Student final satisfaction survey: End of the term (December 14, 2016)

In conclusion, the qualitative methods used for data collection were instructor initial design semi-structured interview (Appendix D), instructor improvement of design semi-structured interview (Appendix E), instructor evaluation of design semi-structured interview (Appendix F), and instructor intervention observation (Appendix G). The quantitative methods used for data

collection were the initial course interest survey (Appendix H), and latter course interest survey (Appendix I), and instructional materials motivation survey (Appendix J). The data collection methods discussed aligned with the four research questions, data sources, and data analysis in Table 1.

Table 1 *Summary of Research Questions, Data Sources, Collection Methods, and Data Analysis*

Research Questions	**Data Sources**	**Collection Methods**	**Data Analysis**
Q1. What practices are associated with making a blended learning course effective and efficient?	Instructors Students Researcher	Literature Review Material Evaluation Survey Instructor Interview Observation	Literature Thematic Coding Mean score (with SPSS)
Q2. What are the instructors' perceptions about their first experience of teaching a blended learning course?	Instructors	Instructor Interview	Thematic Coding
Q3. How does the blended learning course affect student satisfaction?	Students	Student Satisfaction Survey	Paired t-test (if it is significantly skewed T-test Wilcoxon will be used)
Q4. Does the iterative process of this design-based research study	Instructors Students Researcher	Instructor Interview Iterative Student Survey Observation	Thematic Coding Paired T-test

improve the effectiveness and efficiency of a blended learning course throughout the semester?			

Data Collection Instrumentation

Course Interest Survey. This study involved the use of a pretest and post-test survey given to all students enrolled in the psychology courses taught by the instructors. The course interest survey was developed by Keller (1987) in order to measure student perceptions of motivation in face-to-face classroom instruction and in both synchronous and asynchronous online courses. The purpose of using this instrument was to measure student's satisfaction at the beginning of the semester and at the end of the semester. This survey has been validated and used by several research studies (Keller, 2010). Keller gave designers and instructors permission to use the instrument as long as copyright and attribution were noted.

The course interest survey consists of 34 items with roughly equal numbers in each of the four ARCS categories. It can be scored for each of the four subscales or the total scale score. The scoring method for the instrument is located in Table 2. The student's response scale ranges from1 to 5, each question has five possible answers which researcher coded 1-5.

Table 2 *Scoring Guide for Course Interest Survey*

Attention	Relevance	Confidence	Satisfaction
1 4 (reverse) 10	2 5 8 (reverse)	3 6 (reverse) 9	7 (reverse) 12 14

15 21 24 26 (reverse) 29	13 20 22 23 25 (reverse) 28	11 (reverse) 17 (reverse) 27 30 34	16 18 19 31 (reverse) 32 33

In this study, statistical tests were used to measure student satisfaction. In this sense, Table 3 shows the internal consistency estimates of the instrument based on Cronbach's alpha.

Table 3 *Course Interest Survey Internal Reliability Estimate*

Scale	**Reliability Estimate (Cronbach α)**
Attention	.84
Relevance	.84
Confidence	.81
Satisfaction	.88
Total scale	.95

Instructional Materials Motivation Survey. This research study involved the use of instructional materials motivation survey given to all students enrolled in the psychology courses taught by the instructors I worked with. The instrument was developed by Keller (1987) in order to estimate students' motivational attitude toward print-based self-directed learning, computer-based instruction, and online instruction. The purpose of using this instrument was to see whether students were satisfied with the use of instructional activities and tools. Therefore, the utilized

instructional activities and tools could be altered according to students' feedback. This survey has been validated and used by several research studies (Keller, 2010). Keller gave designers and instructors permission to use the instrument as long as copyright and attribution were noted.

The instructional materials motivation survey consisted of 36 items with having 9 items for the both relevance and confidence subscales, 6 items for satisfaction subscale, and 12 items for the attention subscale in terms of the four ARCS categories. It can be scored for each of the four subscales or the total scale score. The scoring method for the instrument is located in Table 4. The student's response scale ranges from1 to 5, each question has five possible answers which researcher coded 1-5.

Table 4 *Scoring Guide for Instructional Materials Motivation Survey*

Attention	**Relevance**	**Confidence**	**Satisfaction**
2	6	1	5
8	9	3 (reverse)	14
11	10	4	21
12 (reverse)	16	7 (reverse)	27
15 (reverse)	18	13	32
17	23	19 (reverse)	36
20	26 (reverse)	25	
22 (reverse)	30	34 (reverse)	
24	33	35	
28			
29 (reverse)			
31 (reverse)			

Table 5 shows the internal consistency estimates of the instrument based on Cronbach's alpha.

Table 5 *Instructional Materials Motivation Survey Scoring Reliability Estimates*

Scale	**Reliability Estimate (Cronbach α)**
Attention	.89
Relevance	.81
Confidence	.90
Satisfaction	.92
Total scale	.96

Semi-Structured Interviews. In order to create a desired blended learning environment that was innovative in terms of meeting instructors' and students' needs, and appropriate for instructors and students as utilizers, I conducted an in-depth interview (Appendix D) with the instructors. In order to enhance strengths of the blended learning environment and overcome deficiencies in the blended learning environment, I conducted a second in-depth interview (Appendix E) with the instructors at the end of the Phase Two. Finally, in order to reveal instructors' experiences in teaching a blended learning course, I conducted the last in-depth interview (Appendix F) with the instructors at the end of the intervention.

The questions of each interview were validated by experienced faculty who have taught online and hybrid courses for several years. Furthermore, each interview was taped. Once each interview was complete, I transcribed the data and analyzed them.

Observation Tool. This research study involved the use of an observation tool. Observing the learning environment was important in three perspectives. First, it enabled me to foster an in depth and rich understanding of implemented blended learning environment in terms of revealing the strengths and weaknesses of the learning environment. With the observational tool, it was determined what needed to be improved in learning environment, and what learning activities and instructional tools were proficient or advanced. Second, although the instructors were competent in their area of expertise, they failed to notice what went wrong in the blended learning environment due to their lack of experience in teaching a blended learning course. In this sense, observing the learning environment unfolded what remained hidden in the interviews with the instructors. Lastly, if instructors faced any problems that they could not solve on their own, I immediately intervened to help overcome the problems.

The observation tool (Appendix G) assisted in the analysis of the blended learning environment in seven main considerations: (a) encouragement of contact between students and faculty; (b) development of reciprocity and cooperation among students; (c) encouragement of active learning; (d) giving prompt feedback; (e) emphasizing time on task; (f) communicating high expectations; and (g) respecting diverse talents and ways of learning. For instance, in order to encourage contact between students and faculty, it was observed whether the instructors were present, proactive, and engaged in the learning environment or the students were challenged to think more deeply with thought-provoking questions by the instructors. Briefly, the instrument provided a beneficial framework to appraise the effectiveness and efficiency of online teaching.

The observation tool was for non-commercial use under a Creative Commons Attribution-Non-Commercial-Share-Alike 4.0 International License. However, I received permission to utilize the instrument for this study.

Data Analysis

The researcher who employs qualitative method in their study should "conduct a rigorous analysis of the data" (Ruona, 2005, p. 234), to protect and convey the participants' meanings. In this study, the interviews and observations were used as data collection techniques. However, the two sources were not only data collection techniques. These two sources could also assist the researcher in data analysis to recognize the contradictions between the data collected by the two methods (Gay, Mills, & Airasian, 2011). Therefore, data analysis began at the same time with the first pieces of data collected and while data was being collected, new questions and issues drove further data collection and analysis (Gay et al., 2011; Ruona, 2005).

Gay et al. (2011) state that three iterative phases can be followed to conduct analysis "(1) becoming familiar with the data and identifying potential themes; (2) examining the data in depth to provide detailed descriptions of the setting, participants, and activity; and (3) categorizing and coding pieces of data and grouping them into themes" (p. 467). Ruona (2005) states that "qualitative data analysis is a process that entails (1) sensing themes, (2) constant comparison, (3) recursiveness, (4) inductive and deductive thinking, and (5) interpretation to generate meaning" (p. 236).

The primary quantitative data of this study was from two validated survey instruments using a Likert type Scale with 5 choices and consisting of 34 items (Appendix H) and 36 items (Appendix J). The data coming from the Course Interest Survey (Appendix H) was analyzed to determine if there was a change between the levels of student satisfaction from the beginning of the semester to the end of the semester for the same group of students. Statistical Paired t-test was used to examine the differences in student satisfaction levels. If the degree of skewness was "significantly skewed" to compare the numerical value, Wilcoxon (T-test) would be used as a

statistical measurement. The data coming from Instructional Materials Motivation Survey (Appendix J) was analyzed to determine if the group of students were satisfied with the instructional materials used in online instruction. To do so, the result of mean score was calculated to decide whether or not they were satisfied. However, it didn't report the reason why students were satisfied or not. Instead the result of this survey helped the researcher analyze qualitative data.

Summary

In conclusion, this multiple case design-based research study, including the collection of qualitative and quantitative data, consisted of three iterative phases for the purpose of determining the need of appropriate technological processes and resources, enhancing the use of instructional activities and tools, and investigating students' satisfaction in order to improve educational practices in a blended learning environment. In accordance with this purpose, I recruited two Psychology instructors and closely worked with them to transform their one graduate level psychology course into a blended learning course throughout the entire Fall 2016 semester. This study also had another type of participant, a total of thirty-four students who enrolled in these instructors' courses in the Fall 2016 semester. I collected qualitative data from the instructors via interviews and observation, and quantitative data from the students via surveys in each intervention phase. Briefly, this chapter elucidated the study's research methodology and included specific information on: (a) research design with rationale for design-based research, (b) participants, (c) data collection, (d) data collection instrumentation, and (e) data analysis. The next chapter will present a concise summary of the results of the study.

CHAPTER 4 RESULTS

The aim of this design-based research study was to explore what elements are needed to assist two psychology instructors who have not had experience in teaching a blended learning course in order to successfully design and implement a blended learning course, and to uncover if/how this blended learning course influences student satisfaction. In this chapter, I report the findings that emerged from analyzing the results of this design base case study. The following four research questions guided this study:

Q1. What practices are associated with making a blended learning course effective and efficient?

Q2. What are the instructors' perceptions about their first experience of teaching a blended learning course?

Q3. How does the blended learning course affect student satisfaction?

Q4. Does the iterative process of this design-based research study improve the effectiveness and efficiency of a blended learning course throughout the semester?

This chapter is divided into three parts. I present the analysis of the qualitative and quantitative data collected for each case during the three iterative design phases. I also compare Case One with Case Two at the end of each phase.

Phase One

Upon IRB approval, Phase One began 3 weeks prior the start of the Fall 2016 semester and ended the 4th week of the semester. Phase One consisted of: 1) An instructor interview, 2) The redesign of the course, 3) Observation of the learning environment, and 4) The student initial course interest survey.

Phase One of Case One

Instructor 1 is a professor and full-time faculty in Psychology. Instructor 1's course was 4 semester credit hours. It was offered for graduate students and only open for students who were in the school and community psychology program. Instructor 1 designed the course to teach (1) "the history and current practice of school psychology in educational and various clinical settings", (2) "the ethical and legal standards for the field", and (3) "trends for the future, influences on the role of the school psychologist, and contexts of employment, including dynamics of school systems and other settings and the diverse groups of children, adolescents, and adults with whom school psychologists interact". Instructor 1's traditional course was heavily based on lectures and reading assignments.

Interview. The purpose of the instructor initial interview was to gain a deeper understanding about Instructor 1's needs, desires and competence for creating a desired blended learning environment. Also, this interview helped me to establish a rapport with Instructor 1. The constant analysis method was used to analyze data collected from the interview. According to Glaser (1965), the constant analysis is "the explicit coding and analytic procedures" (p. 437) and "is designed to allow, with discipline, for some of the vagueness and flexibility which aid the creative generation of theory" (p. 438).

I requested two doctoral students in the Learning Design and Technology program to analyze the data by using open coding, which is "The process of breaking down, examining, comparing, conceptualizing, and categorizing data" (Strauss & Corbin, 1990, p. 61). Two doctoral students in the Learning Design and Technology program and I examined the data as analysts in order to ensure coding reliability, and to discover all explicit and implicit themes from the raw data. Three themes emerged from the initial interview analyses as follows: prior experience,

motivation to change and expectation. The first theme, prior experience, refers to Instructor 1's previous experiences with using learning technological tools, resources or activities. The second theme, motivation to change, refers to Instructor 1's desire to transform a classical learning environment into a blended learning environment. The third theme, expectation, refers to what Instructor 1 anticipates while teaching a blended learning course. Table 6 is a representation of the themes that emerged, and including a few quotes from Instructor 1 to provide evidence of the emerged themes.

Table 6 *Summary of Initial Interview Result for Phase One of Case One*

Emerging Themes	**Sample interview comments**
Prior experience	"I can go into blackboard and I can post things" "I've been old school…I haven't really done much besides just giving them links to articles and then we discuss them in class" "I'm not using technology really. Besides in this class I sometimes use PowerPoints and readings online. That's all."
Motivation to change	"I don't think I can make a statement about overall what I'd like to use. I just think I will" "We just work together to come up with some enhancements or the way these classes run because like I said it's just been run like a classic old school"
Expectation	"I just want it (blended learning environment) to be interesting for the students. I want it to be more stimulating and not the same routine all the time." "maybe there's a better way for them (students) to show what they learned than just writing a paper." "what I'm thinking is going to happen it's going to make them (students) happier and more it will be more applied more relevant."

Redesign of the Course. The purpose of redesigning the course was to transform the traditional learning environment into a blended learning environment. The process of redesigning the learning environment included converting the syllabus, designing a course Blackboard site and creating instructional activities.

Syllabus. The purpose of the syllabus conversion was to smoothly integrate the online learning environment into the face-to-face learning environment, and to have it reflected in the syllabus. In accordance with this purpose, Instructor 1 and I jointly updated the conventional course syllabus through email correspondences along with face-to-face meetings between Instructor 1 and myself. A total of thirty-two emails were exchanged between us to convert the syllabus. A few quotes from our email correspondences show our cooperation for the syllabus conversion via emails.

> "…also attached study guides but those will be updated and we can use questions from the additional readings if I won't cover some of that on tests anymore and instead do other out of class/technology assignments with them. Talk to you soon. Thanks! This will be fun!"
>
> "I think that we are nearly done, but I don't understand some the timelines in the class schedule and the in-class discussions/points allocations. When are you able to meet to discuss briefly?"
>
> "see one last request in comment bubble in course schedule. We are looking good now! Thanks for your work. Also, please check the whole thing for timeline, errors, points, etc"

An updated version of the syllabus included (1) revising the requirements, attendance policy, office hours, course schedule, grading policy, and (2) adding new learning activities and online communication guidelines. The face-to-face components of the course were tightly interwoven with the online components of the course in the syllabus. For instance, the attendance and participation policy in the syllabus began with

> "The class meetings will be both lecture-based and interactive. Attendance at each class meeting, in-depth knowledge of assigned readings, and participation in class discussions are expected. Consistent with this expectation, students are required to come to class with a list of questions from and/or comments about the readings that they would like to clarify and/or discuss further…"

It continued with

> "Online participation is mandatory.
>
> - Discussion is an important part of learning.
> - Participation will be a part of your grade. Respond to your classmates' questions.
> - Evaluation of participation is based on the number and quality of your discussion posts. Quality contributions are those that add to the discussion by raising new questions, points of view, or evidence to consider. Quality posts are marked by clear and concise writing, with use of evidence to support a position, not just unsupported opinion or 'one-liners'…"

The Course Blackboard Site. The purpose of using a Blackboard site was to add the online instructional materials to the course that were traditionally delivered during face-to-face meetings, and provide a variety of supplemental tools to improve face-to-face teaching and facilitate learning. Instructor 1 and I jointly designed and implemented the course Blackboard site. We kept the design of the course Blackboard site simple and organized to help Instructor 1 easily navigate, provide content, and edit items. Also, the straightforward design facilitated accessibility and usability of the content, tools, information, and materials of the course for the students. The basic tools used in the course Blackboard site included a syllabus, discussions, course content,

announcements, grade book, assignments, and a calendar. Three major tasks implemented in the blended learning course are given as examples to show how to design the course Blackboard site.

The first task was to make course materials available on the course Blackboard site. Instructor 1's course was based heavily on reading assignments. All reading assignments, except any readings from the textbook, were uploaded to the Blackboard site, and reading materials such as articles, reports, and case scenarios were linked to the online sites for each week of the semester. For the third week, a part of the reading assignment page on the course Blackboard site is shown in Figure 4 as an example.

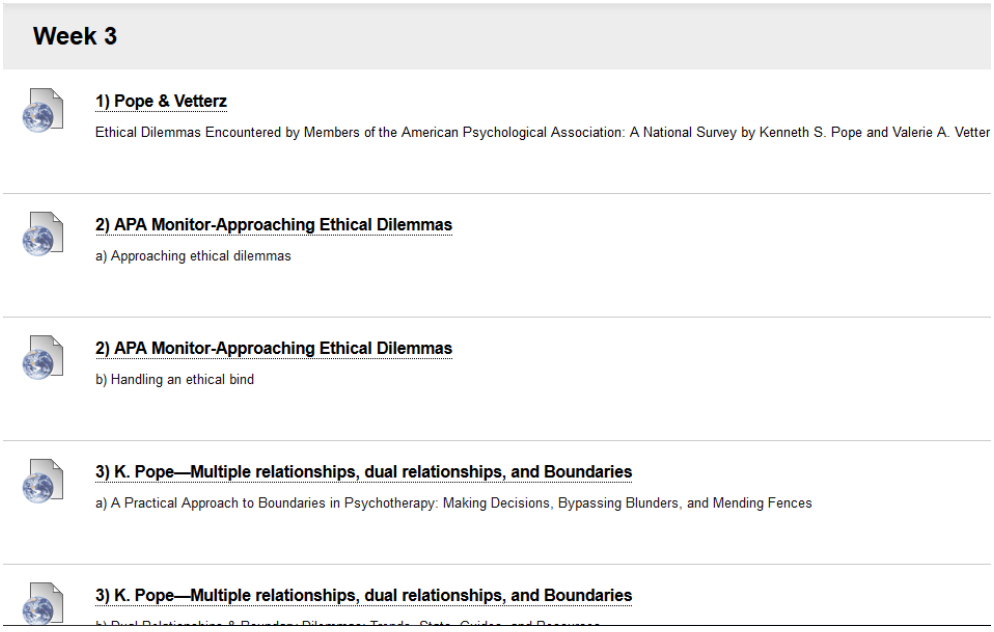

Figure 4 Sample Reading Assignment Page

The second major task was to implement the announcement feature of the Blackboard site. I was available to help both Instructor 1 and students when they needed help while using the technological resources. Instructor 1 or any students contacted with me via email to ask for my help to solve any technological problems as needed. For instance, Instructor 1 faced a problem in the course Blackboard site and sent me an email stating that "The left side links on the left side for

Syllabus and for Content are gone. I can't upload anything." I assisted Instructor 1 with this problem. Also, Instructor 1 and I took a precaution of implementing the announcement tool and posted announcements for students to let them know timely, critical information to course success. One of the announcements was about notifying the students that the online discussion board is ready and showing how to access the group discussion board step-by-step in the course Blackboard site. The announcement was clear and concise as following:

> "I've set up a discussion board for each group that you can access through the "Groups" tab on the left side of the course Blackboard site.
>
> You can follow the below steps:
>
> Open your course Blackboard site
>
> Look at Course Menu (left side of the screen)
>
> Click my groups
>
> Click Discussion Board"

The last major task was that Instructor 1 accepted assignment submissions through the course Blackboard site and evaluated and graded student assignments in the "Grade Center" of the course Blackboard site. These convenient features enabled Instructor 1 to easily collect assignments and interact with students by managing the grades and giving feedback for each student separately. Figure 5 shows the assignment page for the fourth week where Instructor 1 provided quizzes and elicited student quiz submissions.

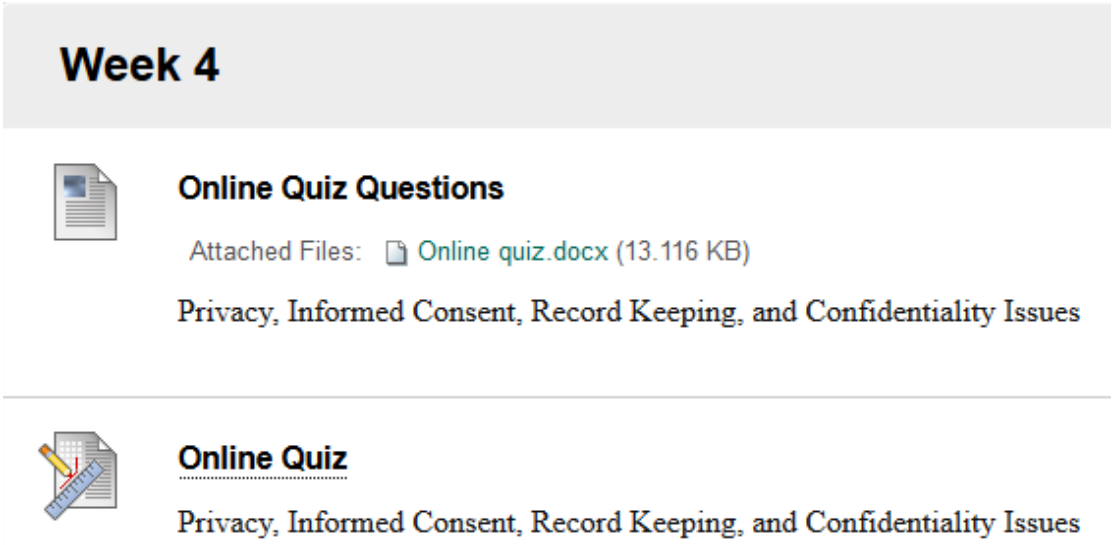

Figure 5 Assignment Page for Submissions

Instructional Activities. The purpose of creating the instructional activities was to enhance the benefits of both face-to-face and online learning and teaching methods. There were two instructional activities to improve interaction between instructor-student and student-student, and promote self-paced learning. These activities were online discussions and online quizzes.

For the first activity, "online discussions," discussion boards in the course Blackboard site were set up for small group discussions by using the Blackboard Groups feature. Each group discussion board contained multiple forums in which a group of students discussed the assigned topics. Discussion assignments allowed the students to play an active role in their learning, and increased the interaction and collaboration among students. These assignments also enabled Instructor 1 to (1) monitor the students to see whether students reflected upon their assigned readings and peers' thoughts, or participated in a critical and thoughtful manner, (2) give a chance for any students who were not confident enough to participate in a discussion or who didn't have time to speak out in face-to-face classes, (3) bring any unsolved issues in group discussions to the face-to-face class for further discussions. For instance, when a discussion group faced a

disorienting problem about a course topic while discussing in their allotted discussion board, Instructor 1's feedback on that thread was the following:

> "remind me to comment in the class about personal therapy notes and gifts from clients…and anything else that I comment on in my comments back to you guys. When you have specific unanswered questions, just email or call me directly."

The second instructional activity was online quizzes. The purpose of this activity was to gauge student comprehension of a topic(s), and promote student engagement in the course. The online quizzes were consisted of open-ended questions which required the students to answer questions in detail in order to show their deep insight of a subject matter. Instructor 1 understood whether the students attain the learning objectives with in the syllabus and give detailed feedback on their learning.

Observation of the Learning Environment. I observed the learning environment by using an observation tool (Appendix G) as guidance. This observation tool provided me a useful framework to evaluate the effectiveness of the blended learning environment, and the results of observation were used to make improvements in the learning environment for the next phase of the study. Table 7 shows the results of the observation based on this framework for Phase One of Case One in the study.

Table 7 *Results of Observation of Learning Environment for Phase One of Case One*

Principle 1: Good practice encourages contact between students and faculty.
Evidence found: • Instructor 1 provided a "welcome message" at the beginning of the course that encouraged student-to-instructor contact for course-related discussions or concerns in the course syllabus and at the first F2F class. • Instructor 1 held regular office hours, and by appointment, that could be F2F in the instructor office or mediated by technology (the telephone and Skype).
Strengths: • Instructor 1 clearly stated requirements for course interactions in the course syllabus.

- Instructor 1 showed her respect toward the students such as her style and language were appropriate and encouraging when replying to students' messages or commenting on their work.
- Instructor 1 replied to student's emails immediately.
- Instructor 1 clearly stated netiquette expectations with regard to online communication in the course syllabus.

Areas for Improvement:

- Instructor 1 should provide students with interaction space for study groups, "hall way conversations," etc.
- Instructor 1 should be present, proactive and engaged in the course blackboard site
- Instructor 1 should initiate contact with, or respond to, students on a regular basis in order to establish a consistent online presence in the course (and prior notice is given to students in the event that the instructor will be unavailable for more than a few days, such as might be the case during professional travel).
- Instructor 1 should encourage and foster a healthy exchange of ideas and sharing of experiences among course participants in online learning environment.
- A prominent announcement area should be active and used to communicate important up-to-date course information to students, such as reminders of impending assignment due dates, curriculum changes, scheduled absences, etc.
- Instructor 1 should improve her navigational skills for herself and the students to be able to give easily understandable navigational instructions

Principle 2: Good practice develops reciprocity and cooperation among students.

Evidence Found:

- Instructor 1 provided regular opportunities for students to engage in the following activities:
    - Formal discussions of course topics
    - Collaborative course assignments
    - Study groups
- Instructor 1 created a friendly atmosphere that reduced students' hesitancy and helped them make personal connections.
- Instructor 1 indicated a clear explanation of the criteria for "good" discussion participation in the syllabus.

Strengths:

- Instructor 1 made the class atmosphere conductive to student learning. The instructor promptly responded students' emails and promoted peer-to peer collaboration.
- Instructor 1 prevented specific students from dominating a discussion.
- Instructor 1 provided student interaction spaces for study groups in the course blackboard site and F2F classes.

Areas for Improvement:

- Instructor 1 should demonstrate modeling of good discussion participation practices in the course blackboard site
- Instructor 1's discussion prompts should guide and elicit student participation for discussion activities.
- Instructor 1 should facilitate discussions by encouraging, probing, questioning, summarizing, etc.
- Instructor 1 should use positive reinforcement to encourage student participation.
- Instructor 1 should be more present, proactive and engaged in the course blackboard site.

Principle 3: Good practice encourages active learning.

Evidence Found:

- Instructor 1 engaged students in the following activities
    - Active use of writing, speaking, and other forms of self-expression
    - Engagement in collaborative learning activities
- Instructor 1 assigned students to think, talk, and write about their learning.

Strengths:

- Instructor 1 made explicit statements drawing student attention to key ideas. Discussions and assignments were designed to focus on key ideas in general. Each constituted discussion group was directed to work collaboratively to respond discussion board questions and each student was required to do assignments on her own.

Areas for Improvement:

- Students should be involved in the following activity:
    - Opportunity for information gathering, synthesis, and analysis in solving problems (including the use of library, electronic/computer and other resources, and quantitative reasoning and interpretation, as applicable)
- Instructor 1 should provide opportunities for students to "customize" their learning by tailoring assignments to their personal and professional interests and needs.
- Instructor 1 should assign students to reflect, relate, organize, apply, synthesize, or evaluate information.

Principle 4: Good practice gives prompt feedback.

Evidence Found:

- Instructor 1 provided information about course feedback methods and standards on the course syllabus.
- Instructor 1 provided assignment feedback that was clear, positive, specific, and focused on observable behavior.

- Instructor 1 explicitly stated individual assignment grading criteria in the course syllabus.
- Instructor 1 provided an up-to-date, student-accessible course gradebook.
- Instructor 1 presented examples of student work that demonstrated advancement toward learning goals.

Strengths:

- Instructor 1 made class atmosphere conductive to student learning.
- Instructor 1 promptly responded to students' emails and promoted peer-to peer collaboration.

Areas for Improvement:

- Instructor 1 should provide meaningful feedback on student assignments in reasonable time frame in the course blackboard site.
- Instructor 1 should open a discussion forum where students can ask questions, and receive instructor feedback, about course content and activities.

Principle 5: Good education emphasizes time on task.

Evidence Found:

- Instructor 1 provided a published course schedule that outlined topics to be covered and assignment due dates so students would plan their workload accordingly.
- Instructor 1 indicated course-specific study tips that provided students with strategies for utilizing their time well.
- Instructor 1 provided assignment due dates and timeframes by taking into account the nature of the target audience. For example, a course targeted to working adult professionals would incorporate a weekend into an assignment timeframe.
- Instructor 1 indicated information in the course syllabus that provided an estimate of the amount of time students should spend on the course.

Strengths:

- Instructor 1 prepared a detailed syllabus. It was very strict and clear to state policies, requirements, and procedures for the course. It also indicated the requirements and expectations with due dates of exams, assignments, and papers.
- Instructor 1 was organized.
    - Organization of content was clear.
    - Course Blackboard site was designed and organized very well.
    - It was free of errors and dead links.
    - Navigation of the course site was easy.
    - Instructional materials were easily accessible and usable.
- Instructor 1 provided clear and detailed explanation of assignments and their rubrics. Introduction to assignments were included. Student learning outcomes were included.

Areas for Improvement:

- Instructor 1 should give assignment feedback that provides students with information on where to focus their studies when students digress the main topic.

Principle 6: Good practice communicates high expectations.

Evidence Found:

- Instructor 1 explicitly communicated every student what skills and knowledge they needed to have in order to be successful in the course.
- Instructor 1 provided clear explanation of course learning goals and how assignments were designed to help students achieve those goals.
- Instructor 1 provided examples of student work that demonstrated advancement toward learning goals.

Strengths:

- Instructor 1 appropriately provided instructional aid to facilitate important points
- Instructor 1 constituted a grading policy which was easy to understand and demonstrated progress in course.
- Instructor 1 clearly stated learning outcomes of the course.

Areas for Improvement:

- Instructor 1 should ask critical and probing questions when communicating with students about course assignments and activities.
- Instructor 1 should provide frequent and detailed feedback on students' assignments through written explanations.
- Instructor 1's assessment strategy should provide more informative and constructive feedback to students
- Instructor 1 should be able to motivate and encourage students to answer the questions that require more complex solutions

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Principle 7: Good practice respects diverse talents and ways of learning.

Evidence Found:

- Instructor 1 utilized a variety of assessment tools that gauged student progress.
- Instructor 1 provided supplemental online materials the students who lacked prerequisite knowledge or who would benefit from having content presented in an alternative manner.
- Instructor 1 stated a clear policy for accommodations in the course syllabus.

Strengths:

- Presentation of content was appropriate. The links the Instructor 1 provided worked and connected to appropriate areas.
- The Instructor 1's method of presentation was appropriate. Lecture, discussion and quiz activities were suitable for the students
- Instructor 1 provided current tools and technologies that enhanced learning

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Areas for Improvement:

- Instructor 1 should provide alternative assignment options that allow students to demonstrate their progress in a manner that is best conducive to their talents.
- Instructor 1 should provide timely, corrective feedback for online activities.
- Instructor 1 should create a positive online climate where students are encouraged to seek assistance with course content and learning activities if needed.

Initial Course Interest Survey. The Initial Course Interest Survey was administered in the third week of the semester in order to measure the motivation levels of the students. Eleven students consisting of one male and ten female participants agreed to complete the survey. Coding of the quantitative data to analyze the survey data collected from the students was the following format. Each question from 1 – 34 was documented with the following codes: 1 = Not True, 2 = Slightly True, 3 = Moderately True, 4 = Mostly True, 5 = Very True, except the reverse questions. Each reverse question was documented by reversing the response of 5 becoming 1, 4 becoming 2, 3 staying the same at 3, 2, becoming 4 and 1 becoming 5. Keller (2010) states that the minimum score on the Course Interest Survey is 34 and the highest score is 170 with a midpoint of 102, and there is not normal distribution of responses. The students (n=11) had a mean score of 127.45. For "Satisfaction", one of the four categories of Keller's model, the minimum score is 9 and the highest score is 45, and there is no normal distribution of responses for the subcategories. The students (n=11) had a mean score of 30.15. The scores suggest that the students enrolled in Instructor 1's class were motivated and satisfied at the third week of the semester.

Phase One of Case Two

Instructor 2 is an associate professor and full-time faculty in Psychology. The Instructor 2' course was 3 semester credit hours. The course was offered for only graduate students and there were twenty-three students in the Instructor 2's class. Instructor 2 designed the course to teach

"diagnostic issues in adult mental health including diagnostic classification, epidemiology, course, and the genetic, neurobiological, cultural and social factors that relate to the etiology and maintenance of mental health disorders". The Instructor 2's traditional course was heavily based on lectures and reading assignments.

Interview. The purpose of the instructor initial interview was to gain a deeper understanding about Instructor 2's needs, desires and competence for creating a desired blended learning environment. Also, this interview was a good chance for me to establish a rapport with Instructor 2. The constant analysis method was used to analyze data collected from the interview. I requested two doctoral students in the Learning Design and Technology program to analyze the data by using open coding.

Two doctoral students and I examined the data as analysts in order to ensure coding reliability and discover all explicit and implicit themes from the raw data. Five themes emerged from the initial interview analyses as follows: prior experience, motivation to change, expectation, concern/ambiguity and resistance. The first theme, prior experience, refers to Instructor 2's previous experiences with using learning technological tools, resources or activities. The second theme, motivation to change, refers to Instructor 2's desire to transform classical learning environment into the blended learning environment. The third theme, expectation, refers to what Instructor 2 anticipates while teaching a blended learning course. The fourth theme, ambiguity/concern, refers to the possible challenges Instructor 2 might face while teaching the blended learning course. The last theme, resistance refers to reasons Instructor 2 was reluctant to teach the blended learning course. Table 8 is a representation of the themes that emerged, including a few quotes from Instructor 2 to provide evidence of the emerged themes.

Table 8 *Summary of Initial Interview Result for Phase One of Case Two*

Emerging Themes	**Sample interview comments**

Prior experience	"I'm aware of some of the technological tools (using blackboard)"
Motivation to change	"I'm not interested in people memorizing and regurgitating information but I'm interested in people internalizing and knowing how to use material and resources and where to find information."
Expectation	"I would like to present it (information) in an engaging, innovative way." "I want to use them (technological tools) to make my work more efficient to reach more people and to accommodate people's lives in various ways." "I want it (blended learning) to be engaging something people look forward to doing."
Ambiguity / Concern	"My weaknesses include organizing material in an efficient manner."
Resistance	"I don't want to create another burden."

Redesign of the Course. The purpose of redesigning the course was to transform the traditional learning environment into a blended learning environment. The process of redesigning the learning environment included converting the syllabus, designing a course Blackboard site and creating instructional activities.

Syllabus. The purpose of the syllabus conversion was to smoothly integrate the online learning environment into the face-to-face learning environment, and to have it reflected in the syllabus. In the direction of this purpose, Instructor 2 and I jointly updated the conventional course syllabus through email correspondences, along with face-to-face meetings between Instructor 2 and myself. A total of fifteen emails were exchanged between us to convert the syllabus. A few quotes from our email correspondences show our cooperation for the syllabus conversion via emails.

"Here is a really rough draft… I have it outlined with online days. What do you think?"

> "I reviewed and updated the syllabus. I indicated the date of case studies and peer group discussions. You can change any of them. I explained how to discuss each topic. Please see the highlighted writings in the syllabus."
>
> "I am currently working on finalizing the syllabus and will post it by class"

An updated version of the syllabus included (1) revising the requirements, attendance policy, office hours, course schedule, grading policy, and (2) adding new learning activities and online communication guidelines. Converting the course syllabus was an important part of transforming the conventional course to the blended learning course. The updated version of the syllabus was a comprehensive plan that kept Instructor 2 organized in the online and face-to-face learning environment, and provided opportunities for students to review the course components, expectation and requirements of the blended learning course. It guided the students what, how and why to do the assignments along with giving due date of assignments. For instance, one of the assignments, the peer group discussion assignment, was clearly elucidated in the course syllabus with providing an explicit due date of each discussion assignment.

> "I will assign you to a peer group that you will work with for the remainder of the semester. Peer group discussions are a significant requirement of each student in the course. The guidelines for each peer group discussion are the same.
>
> I have chosen to use this method of assessing your understanding of the material because I believe that it's important for you to critically analyze each topic that we are addressing during the semester. For each peer group discussion, you will be asked to thoughtfully answer guiding questions that are based on the readings. You will also engage in a discussion of the topics with your peers.
>
> Please engage your peers thoughtfully, respectfully, and positively. Meaningful breadth and depth of your response is expected. You will be graded on your comprehension and depth of response, NOT by the length.
>
> For Peer Group Discussion 1, your initial post should be completed by 9/16 Friday night. Additional interactions should be completed by 9/19 Monday night at 11:59 p.m."

The Course Blackboard Site. The purpose of using a Blackboard site was to add the online instructional materials to the course that were traditionally delivered during face-to-face meetings, and provide a variety of supplemental tools to improve face-to-face teaching, and facilitate learning. Instructor 2 and I jointly designed and implemented the course Blackboard site. We kept the design of the site simple and organized to help Instructor 2 easily navigate, provide content, and edit items. Besides, this well-organized design of the site allowed the students to effortlessly access and use the content, tools, information, and materials of the course. The basic tools used in the course Blackboard site included a syllabus, discussions, course content, announcements, grade book, assignments, and a calendar. Three major tasks implemented in the blended learning course are given as examples to show how to design the course Blackboard site.

The first task was to make course materials available on the course Blackboard site. Instructor 2's course was based heavily on reading assignments. All readings assignments such as articles, reports, case scenarios etc. and all learning materials such as PowerPoint presentation, video lecture, visual aids, website links as supplemental resources were uploaded to weekly content folders. This content page was designed to automatically show each week folder according to course schedule. For instance, while the first three content folders were visible, the rest of content folders were invisible for the students at the third week of the semester. However, the fourth week content automatically became visible for students at the fourth week of the semester. Figure 6 illustrates a part of the weekly content folders and a sample of all learning materials in one of the content folder as an example.

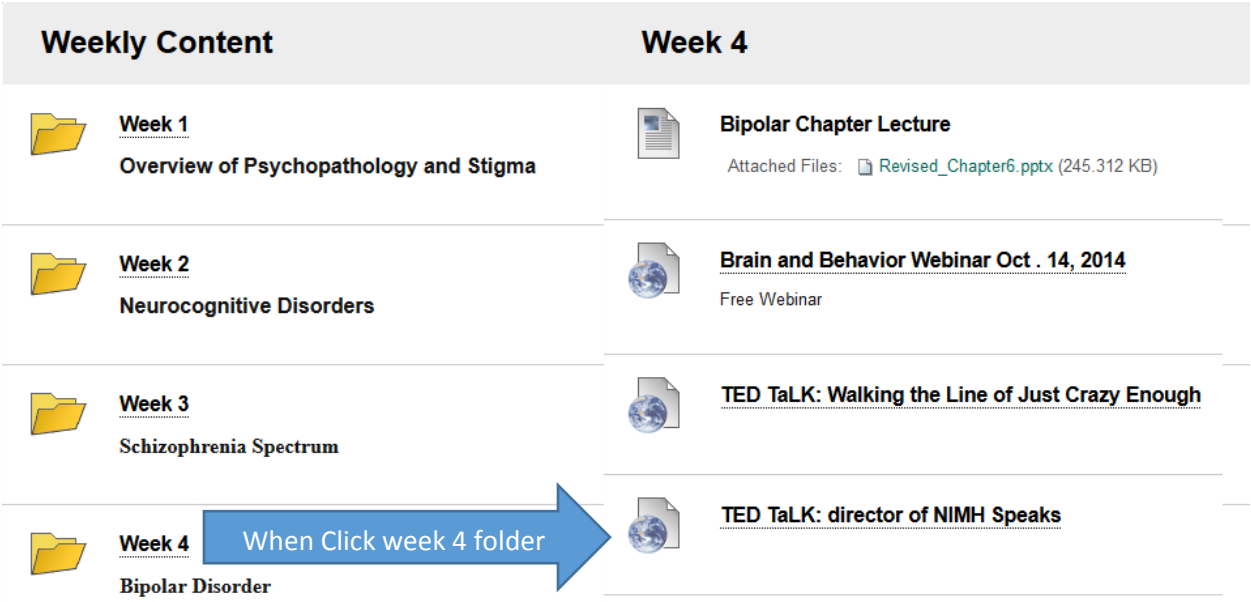


Figure 6 Sample Weekly Content Folders and Learning Materials

The second major task was to provide the course textbooks in the course Blackboard site through the university library. It was a major task because while the students had been required to purchase the course textbooks previous years, they were allowed to use an electronic version of the textbooks. Therefore, the students had access to all learning materials including the electronic version of the textbooks anywhere and anytime as long as they had an electronic device such as a computer tablet and Internet access. Also, they were allowed to bring their electronic devices such as a tablet or laptop to the class. Therefore, the students had an opportunity to access all required readings including the textbooks, articles and other types of readings without necessarily purchasing them, and to increase their familiarity with using the university library and increase their interactions with librarians, which helped them do their research assignments. Figure 7 shows one of the textbooks in the course blackboard site.

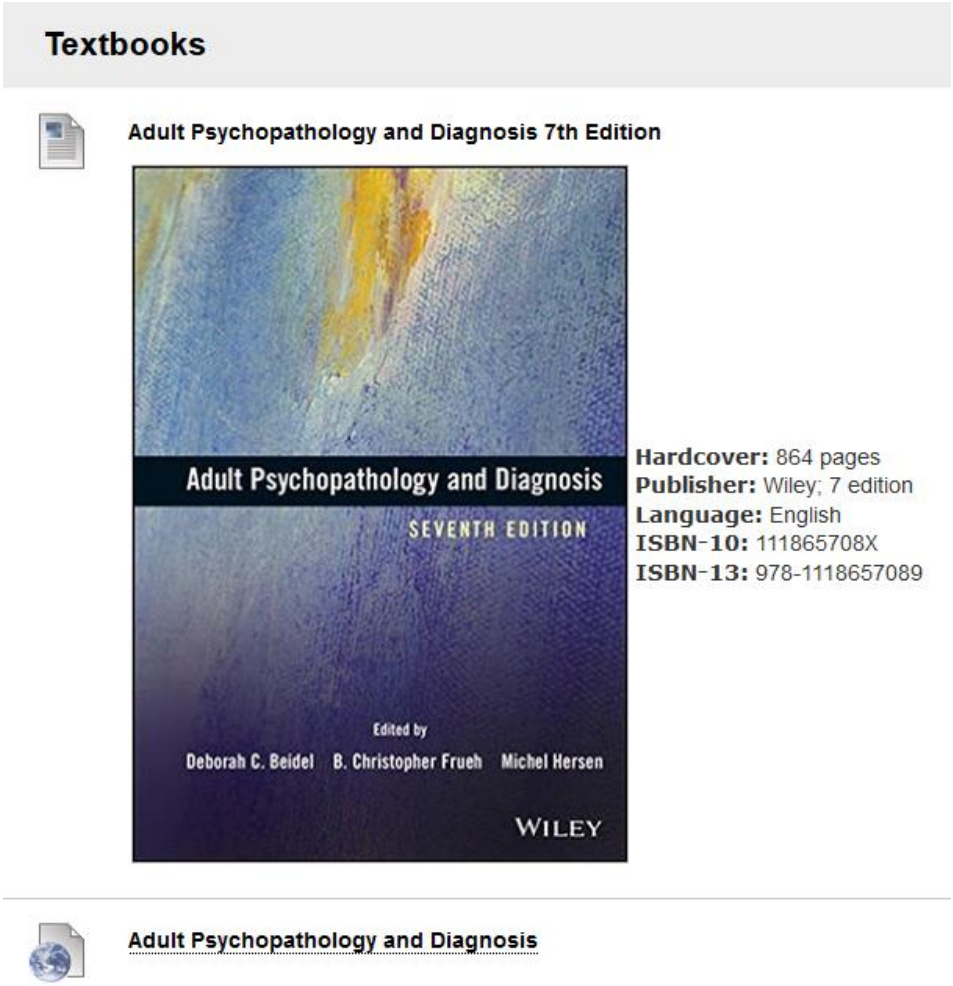


Figure 7 One of the Textbooks in the Blackboard Site

The last major task was that Instructor 2 and I implemented a discussion forum for general questions about the class. The students were able to use this forum to ask questions about assignments, deadlines, class procedures or concerns. Asking a question made the question and answer available to everyone through this forum. The students were encouraged to answer their classmate's question. Therefore, the students who had the same question had a chance to find a response, and their interaction among students and their engagement in the classroom increased. Instructor 2 and I also monitored this forum to respond to questions posted here when an issue was

not resolved by peer interactions. Figure 8 demonstrates one of the issues solved by peer interaction and Instructor 2 participation through this discussion forum.

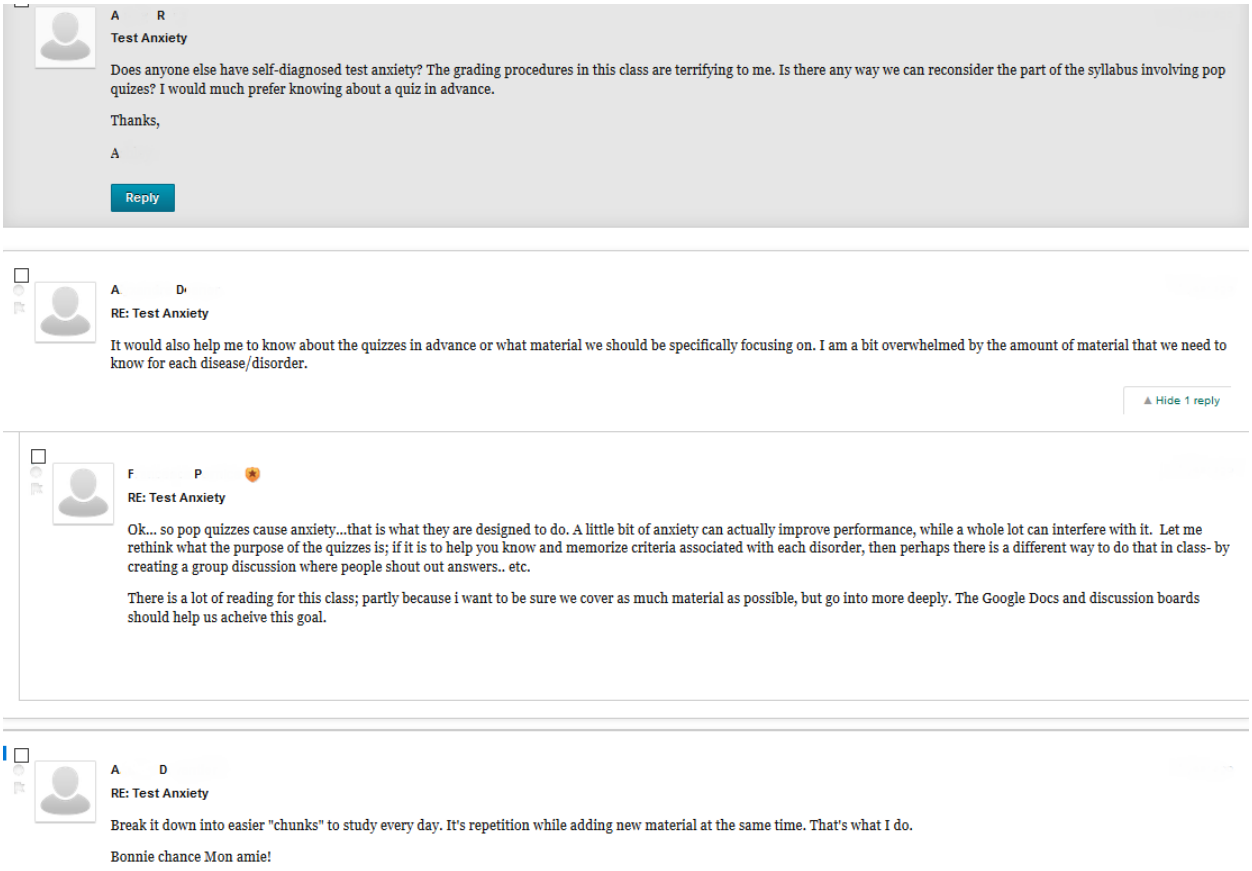


Figure 8 Sample Support Discussion Board

Instructional Activities. The purpose of creating the instructional activities was to enhance the benefits of both face-to face and online learning and teaching methods. There were two instructional activities to 1) improve interaction between instructor-student and student-student, 2) engage the students in online knowledge construction, and 3) promote self-paced learning. These activities were online discussions and a collaborative Google Document writing.

For the first activity, “online discussions,” discussion boards in the course Blackboard site were set up for small group discussions by using the Blackboard Groups feature. Each group

discussion board contained multiple forums in which a group of students discussed the assigned topics. Discussion assignments allowed the students to play an active role in their learning, and increased the interaction and collaboration among students. These assignments also enabled Instructor 2 to (1) monitor the students to see whether students reflected upon their assigned readings and peers' thoughts, and/or participated in a critical and thoughtful manner, (2) give a chance for any students who were not confident enough to participate in-class discussions or who didn't have time to speak out in face-to-face classes, (3) bring any unsolved issues in group discussions to the face-to-face class for further discussions.

The second instructional activity was a collaborative Google Document writing. Instructor 2 and I prepared a Google Document for a class summary document that was intended to compile a weekly summary of in-class discussions, lectures and readings into one document from voluntary participation of the students. Instructor 2 named the Google Document as "Google Docs Take Away" and explained its purpose as "This is a class summary document that is intended to summarize your 'take away' from class discussion, lecture, and readings. Keep it simple, be curious, and have fun." The main purpose of this online communication means was to enhance student engagement and complement the face-to-face activities through the use of another effective online communication strategy. This collaborative tool (1) facilitated and increased student-student interactions, student-instructor interactions, and student-content interactions (2) gave a chance student to review a summary of in-class discussions, lectures and readings for those who didn't attend the face-to-face class for any reason and (3) provided an opportunity for students to have a beneficial summary of whole face-to-face lessons at end of the semester.

The students who wanted to contribute to the document selected and kept a font color throughout the semester in order to write their take away. The aim of selecting different colors was

to differentiate students' contributions. While instructional activities were taking place, I was always available to provide technical support for Instructor 2 and students. When any of them needed help while using any learning activities or facing any kind of problems, they could contact me via email and I endeavored to solve their issue immediately. Although I demonstrated how to use the learning tools for any learning activities at the beginning of the semester, some students and Instructor 2 were in need of additional support to utilize the learning tools. For instance, participating in the Google Document was a voluntary action to take advantage of this learning activity. The first two weeks of the semester, just nine students out of twenty-three subscribed to the Google Document. At the third week, there was a dramatic increase in subscription of the document after the students realized the benefits of it. As a result of this increase, a couple of students had a problem using it. One of them requested my help by sending an email stating "If I bring my computer to class, can you help me with Google Docs, please? I'm not very tech". In response to their request, we arranged a time and date and I went to the class to meet them about an hour before class time on that day before the class time. I particularly demonstrated the specific features of Google Docs for them to be able to effectively utilize it.

Observation of the Learning Environment. I observed the learning environment by using an observation tool (Appendix G) as guidance. This observation tool provided me a useful framework to evaluate the effectiveness of the blended learning environment, and the results of observation were used to make improvements in the learning environment for the next phase of the study. Table 9 shows the results of the observation based on this framework for Phase One of Case Two in the study.

Table 9 *Summary of Observation of Learning Environment for Phase One of Case Two*

Principle 1: Good practice encourages contact between students and faculty.
Evidence Found

- Instructor 2 provided a "welcome message" at the beginning of the course that encouraged student-instructor contact for course-related discussions or concerns in the course syllabus and at the first F2F class.
- Instructor 2 encouraged and fostered a healthy exchange of ideas and sharing of experiences among course participants.
- Instructor 2 used a prominent announcement area to communicate important up-to-date course information to students, such as reminders of impending assignment due dates, curriculum changes, scheduled absences, etc.
- Instructor 2 held regular office hours, and by appointment, that could be F2F in the instructor office or mediated by technology (e.g., the telephone, chat areas, Adobe Connect Pro).
- Instructor 2 stated requirements for course interactions in the course syllabus.

Strengths:

- Instructor 2 provided students with interaction space for study groups, "hall way conversations," etc.
- Instructor 2 showed her respect toward the students such as her style and language were appropriate and encouraging when replying to students' messages or commenting on their work in the course blackboard site or F2F class.
- Instructor 2 clearly stated netiquette expectations with regard to online communication in the course syllabus.
- Instructor 2 was willing to improve her navigational skills for herself and the students to be able to give easily understandable navigational instructions.

Areas for Improvement:

- Instructor 2 should initiate contact with, or respond to, students on a regular basis in order to establish a consistent online presence in the course (and prior notice is given to students in the event that the instructor will be unavailable for more than a few days, such as might be the case during professional travel).
- Instructor 2 should be present, proactive and engaged in the course blackboard site
- Instructor 2 should respond student inquiries in a timely manner.

Principle 2: Good practice develops reciprocity and cooperation among students

Evidence Found:

- Instructor 2 provided regular opportunities for students to engage in the following activities:
    - Formal and/or informal discussions of course topics
    - Collaborative course assignments
    - Study groups
- Instructor 2 provided discussion prompts that helped to guide and elicit student participation in class discussion activities.
- Instructor 2 created a friendly atmosphere that reduced students' hesitancy and helped them make personal connections.

- Instructor 2 indicated a clear explanation of the criteria for "good" discussion participation in the syllabus.
- Instructor 2 facilitated discussions by encouraging and questioning.
- Instructor 2 made the class atmosphere conductive to student learning.

Strengths:

- Instructor 2 provided student interaction space for study groups, "hall way conversations," etc.
- Instructor 2 provided student interaction spaces for study groups in the course blackboard site and F2F classes.
- Instructor 2 used positive reinforcement to encourage student participation.

Areas for Improvement:

- Instructor 2 should prevent specific students from dominating a discussion.
- Instructor 2 should demonstrate modeling of good discussion participation practices in the course blackboard site
- Instructor 2 should be more present, proactive and engaged in the course blackboard site.

Principle 3: Good practice encourages active learning.

Evidence Found:

- Instructor 2 involved students in the following activities
    - Active use of writing, speaking, and other forms of self-expression
    - Engagement in collaborative learning activities
    - Dialogue pertaining to social behavior and scholarly conduct
- Instructor 2 assigned students to reflect and relate information.

Strengths:

- Instructor 2 made explicit statements drawing student attention to key ideas. Discussions and assignments were designed to focus on key ideas in general. Each constituted discussion group was directed to work collaboratively to respond discussion board questions and each student was required to do assignments on her own.
- Instructor 2 assigned students to think, talk, and write about their learning.

Areas for Improvement:

- Instructor 2 should provide the following activity(ies):
    - Opportunity for information gathering, synthesis, and analysis in solving problems (including the use of library, electronic/computer and other resources, and quantitative reasoning and interpretation, as applicable)
- Instructor 2 should provide opportunities for students to "customize" their learning by tailoring assignments to their personal and professional interests and needs.

- Instructor 2 should assign students to organize, apply, synthesize, or evaluate information.

Principle 4: Good practice gives prompt feedback.

Evidence Found:

- Instructor 2 provided information about course feedback methods and standards on the course syllabus.
- Instructor 2 provided assignment feedback that was clear, positive, specific, and focused on observable behavior.
- Instructor 2 explicitly stated individual assignment grading criteria in the course syllabus.
- Instructor 2 provided an up-to-date and student-accessible course gradebook.

Strengths:

- Instructor 2 provided an open discussion forum where students could ask questions, and receive instructor feedback, about course content and activities.
- Instructor 2 made class atmosphere conductive to student learning.

Areas for Improvement:

- Instructor 2 should provide meaningful feedback on student assignments in reasonable time frame in the course blackboard site.
- Instructor 2 presented examples of student work that demonstrated advancement toward learning goals.
- Instructor 2 should provide opportunity for students to submit drafts of assignments for instructor feedback.
- Instructor 2 should promptly respond to students' emails and other inquires.

Principle 5: Good education emphasizes time on task.

Evidence Found:

- Instructor 2 provided a published course schedule that outlined topics to be covered and assignment due dates so students would plan their workload accordingly.
- Instructor 2 indicated course-specific study tips that provided students with strategies for utilizing their time well.
- Instructor 2 provided assignment due dates and timeframes by taking into account the nature of the target audience. For example, a course targeted to working adult professionals would incorporate a weekend into an assignment timeframe.
- Instructor 2 indicated information on the course syllabus that provided an estimate of the amount of time students should spend on the course.

Strengths:

- Instructor 2 prepared a detailed syllabus. It was very strict and clear to state policies, requirements, and procedures for the course. It also indicated the requirements and

expectations with due dates of exams, assignments, and papers.

- Instructor 2 was organized.
  - Organization of content was clear.
  - Course Blackboard site was designed and organized very well.
  - It was free of errors and dead links.
  - Navigation of the course site was easy.
  - Instructional materials were easily accessible and usable.
- Instructor 2 provided clear and detailed explanation of assignments and their rubrics. Introduction to assignments were included. Student learning outcomes were included.

Areas for Improvement:

- Instructor 2 should give assignment feedback that provides students with information on where to focus their studies when students digress the main topic.

Principle 6: Good practice communicates high expectations.

Evidence Found:

- Instructor 2 explicitly communicated every student what skills and knowledge they needed to have in order to be successful in the course.
- Instructor 2 provided clear explanation of course learning goals and how assignments were designed to help students achieve those goals.
- Instructor 2 motivated and encouraged students to answer the questions that require more complex solutions
- Instructor 2 asked critical and probing questions when communicating with students about course assignments and activities.
- Instructor 2 appropriately provided instructional aid to facilitate important points

Strengths:

- Instructor 2 constituted a grading policy which was easy to understand and demonstrated progress in course.
- Instructor 2 clearly stated learning outcomes of the course.
- Instructor 2's assessment strategy should provide more informative and constructive feedback to students.

Areas for Improvement:

- Instructor 2 should provide frequent and detailed feedback on students' assignments through written explanations.
- Instructor 2 should provide examples of student work that demonstrated advancement toward learning goals.
- Instructor 2 should show examples and non-examples of high quality work, along with a discussion of the differences between these.

Principle 7: Good practice respects diverse talents and ways of learning.

Evidence Found:

- Instructor 2 utilized a variety of assessment tools that gauged student progress.

- Instructor 2 stated a clear policy for accommodations in the course syllabus.
- Instructor 2 created a positive online climate where students were encouraged to seek assistance with course content and learning activities if needed.
- Instructor 2 provided alternative assignment options that allowed students to demonstrate their progress in a manner that was best conductive to their talents.
- Instructor 2 created a positive online climate where students were encouraged to seek assistance with course content and learning activities if needed.

Strengths:

- Instructor 2 provided supplemental online materials the students who lacked prerequisite knowledge or who would benefit from having content presented in an alternative manner.
- Presentation of content was appropriate. The links the Instructor 2 provided worked and connected to appropriate areas.
- Instructor 2's method of presentation was appropriate. Lecture, discussion and Google activities were suitable for the students
- Instructor 2 provided current tools and technologies that enhanced learning

Areas for Improvement:

- Instructor 2 should provide timely, corrective feedback for online activities.

Initial Course Interest Survey. The Initial Course Interest Survey was administered in the third week of the semester in order to measure the motivation levels of the students. Twenty-three students consisting of two male and twenty-one female participants agreed to complete the survey. Coding of the quantitative data, to analyze the survey data collected from the students, was the following format. Each question from 1 – 34 was documented with the following codes: 1 = Not True, 2 = Slightly True, 3 = Moderately True, 4 = Mostly True, 5 = Very True, except the reverse questions. Each reverse question was documented by reversing the response of 5 becoming 1, 4 becoming 2, 3 staying the same at 3, 2, becoming 4 and 1 becoming 5. Keller (2010) states that the minimum score on the Course Interest Survey is 34 and the highest score is 170 with a midpoint of 102, and there is not normal distribution of responses. The students (n=23) had a mean score of 141.1. For "Satisfaction", one of the four categories of Keller's model, the minimum score is 9 and the highest score is 45, and there is no normal distribution of responses for the

subcategories. The students (n=23) had a mean score of 34.4. The scores suggest that the students enrolled in Instructor 2's class were motivated and satisfied at the third week of the semester.

Summary of Phase One of Both Cases

Through using the observation tool, the findings of the observation were previously given for Phase One of both cases in detail. According to the observation findings, the instructors displayed some key competencies in teaching a blended learning course while they also lacked some key competencies to make a blended learning course an effective and efficient learning environment. Based on a collection of qualitative observation data, Table 10 shows the summary of the strengths and weaknesses of the instructors.

Table 10 *Summary of Strengths and Weaknesses of the Instructors in Phase One of Each Case*

Phase One of Both of Cases		
Feedback for the Instructor	**Instructor 1**	**Instructor 2**
Strengths	-Syllabus was converted to Blended course syllabus including • Requirements and expectation for due dates of exams, assignments, and papers, course interactions • Course learning goals, assessments and learning activities • Netiquette expectations regarding online communication • Clear assignment grading criteria • Detail and clear course schedule -Making the class atmosphere conductive to student learning -Providing students with interaction space for study groups -Engaging students in collaborative learning activities and active use of writing and speaking activities	-Syllabus was converted to Blended course syllabus including • Requirements and expectation for due dates of exams, assignments, and papers, course interactions • Course learning goals, assessments and learning activities • Netiquette expectations regarding online communication • Clear assignment grading criteria • Detail and clear course schedule -Making the class atmosphere conductive to student learning -Providing student interaction spaces for study groups -Engaging students in collaborative learning activities, and active use of writing and speaking activities

	-Providing a well-organized course Blackboard site including organized content, free of errors and dead links, easy navigation, and easily accessible and usable learning materials -Providing assignment feedback that was clear, positive, specific, and focused on observable behavior -Responding to students' emails and promoting peer-to peer collaboration -Utilizing a variety of assessment tools -Providing supplemental online materials -Making explicit statements drawing student attention to key ideas -Assigning students to think, talk, and write about their learning -Preventing specific students from dominating a discussion	-Providing a well-organized course Blackboard site including organized content, free of errors and dead links, easy navigation, and easily accessible and usable learning materials -Providing assignment feedback that was clear, positive, specific, and focused on observable behavior -Responding to students' emails and promoting peer-to peer collaboration -Utilizing a variety of assessment tools -Providing supplemental online materials -Making explicit statements drawing student attention to key ideas -Assigning students to think, talk, and write about their learning -Encouraging and fostering a healthy exchange of ideas and sharing of experiences among course participants in online learning environment -Providing an open discussion forum where students could ask questions, and receive instructor feedback, about course content and activities -Guiding and eliciting student participation -Using a prominent announcement area to communicate important up-to-date course information to students -Providing alternative assignment options - Using positive reinforcement to encourage student participation
Weaknesses	-Being present, proactive and engaged in the course blackboard site -Demonstrating modeling of good discussion participation practices - Providing opportunities for students to "customize" their learning, and	-Being present, proactive and engaged in the course blackboard site -Demonstrating modeling of good discussion participation practices - Providing opportunities for students to "customize" their learning, and

	information gathering, synthesis, and analysis in solving problems -Giving Information on where to focus their studies when students digress main topic -Providing frequent and detailed feedback -Providing meaningful feedback on student assignments in reasonable time frame - Facilitating discussions by encouraging, probing, questioning, summarizing -Motivating and encouraging students to answer the questions -Opening a discussion forum where students can ask questions, and receive instructor feedback, about course content and activities -Guiding and eliciting student participation -Providing alternative assignment options -Encouraging and fostering a healthy exchange of ideas and sharing of experiences among course participants in online learning environment	information gathering, synthesis, and analysis in solving problems -Giving information on where to focus their studies when students digress main topic -Providing frequent and detailed feedback -Providing meaningful feedback on student assignments in reasonable time frame -Responding student inquiries in a timely manner -Assigning students to organize, apply, synthesize, or evaluate information -Promptly responding to students' emails and other inquires -Preventing specific students from dominating a discussion

As indicated in Table 10, each instructor's syllabus was well-prepared in terms of theoretically integrating the best practices of online learning into the best practices of face-to-face learning. Also, each course Blackboard site was well-organized in terms of providing easy navigation, facilitating accessibility and usability of learning materials, and avoiding errors and dead links. However, while Instructor 1 was good at preventing specific students from dominating a discussion, Instructor 2 outperformed Instructor 1 in teaching a blended learning course overall. Instructor 2 provided an open discussion forum for students to ask questions and receive instructor

feedback about course content and activities, which also promoted a healthy exchange of ideas and experiences among students. Instructor 2 also provided additional assignment opportunities that encouraged students to participate in learning activities under guidance of the instructor. On the other hand, both of the instructors should have been more present, proactive and engaging to be a model of good discussion participation. Both instructors should have provided detailed feedback on student assignments and inquiries in a timely manner.

In both cases, digital learning resources were used in a variety of ways to support teaching and learning. Table 11 shows the purpose of utilized learning resources and the level of benefits provided for the learning environments.

Table 11 *Summary of Learning Resources Used in Phase One of Both Cases*

Use of Resource	**Instructor 1**		**Instructor 2**	
	Purpose of Use	**Level of Benefit**	**Purpose of Use**	**Level of Benefit**
Discussion Board	Allowing students to demonstrate their cognitive and critical thinking skills for thoughtful, in-depth reflection on a variety questions of course topics	Low	Allowing students to demonstrate their cognitive and critical thinking skills for writing thoughtful, in-depth reflections on a variety questions of course topics	Low
Open-Ended Questions Quiz	Assessing student comprehensive understanding of topics in a chapter	Moderate	N/A	N/A
Google Document	N/A	N/A	Enhancing student engagement and complementing the face-to-face activities through the use of another effective online communication strategy	Moderate
Course Blackboard Site	-Providing content such as articles, reports, and case scenarios Providing schedule, and due dates	Moderate	-Providing content such as textbooks, articles, reports, case scenarios etc. and all learning materials,	High

	-Assignment submission -Keeping track of student work, and sending bulk emails to the -Discussion Board activities -Grading and Commenting on student assignments - Providing file exchange areas		-Sharing additional learning materials such as PowerPoint presentations, video lectures, visual aids, and website links -Providing schedule, and due dates -Assignment submission -Keeping track of student work, and sending bulk emails to the students -Discussion Board activities - Providing a Q&A forum for assignments, deadlines, class procedures or concerns -Grading and Commenting on student assignments -Providing file exchange areas	

Table 11 shows the similarities and differences of the use of the instructional resources. The main similarity was the utilization of discussion board activities. Both instructors used discussion board activities to give a chance for students to exhibit their cognitive and critical thinking skills for thoughtful, in-depth reflection on a variety of questions related to course topics. However, while Instructor 1 assigned students with online open-ended question quizzes to evaluate student comprehensive understanding, Instructor 2 provided a collaborative Google Document writing activity to promote student engagement and complement the face-to-face activities. In addition, Instructor 2 utilized the course Blackboard site more comprehensively than Instructor 1 for providing educational materials, improving communication, and tracking and assessing students.

According to the results of Phase One of both cases, a part of the first research question of the study, "What practices are associated with making a blended learning course effective and efficient?", can be addressed. However, there will be detailed answers and discussions for the research questions according to the results of all intervention phases of both cases in the next chapter.

Initially, it was important to identify the instructors in terms of their prior experiences, motivations, expectations, and concerns and resistances of using technological resources. In addition to that, it was crucial to consider who students were, what their particular goals were, and what the context was for choosing the right learning and teaching practices to design the combination of the best features of face-to-face learning with the best features of online learning. After obtaining enough knowledge, it was necessary to convert the traditional course syllabus into a syllabus for a blended learning course. In accordance with this purpose, online and face-to-face learning activities and assessments were clearly stated in addition to course objectives in both of the courses' respective syllabi. It also indicated requirements and expectations for exams, assignments, papers, course interactions and online communication. There was a detailed and clear course schedule that necessarily showed online and face-to-face class weeks and the due dates of exams, assignments, and papers within both of the syllabi. Lastly, the syllabi included assignment grading criteria and attendance policy. Overall, an online learning environment and face-to-face learning environment were theoretically combined in one learning environment in both of the syllabi. In this sense, the transition from the traditional course syllabus to the blended course syllabus was successfully achieved in both cases.

Furthermore, the use of a course Blackboard site enabled instructors to provide multiple content formats (text, images, sound, audio, animations and graphs). Both instructors utilized their

course site to provide any course content such as textbooks, articles, reports and case scenarios. In addition to that, Instructor 2 provided learning materials such as PowerPoint presentations, video lectures, visual aids, and website links via the course Blackboard site. Therefore, the students in Instructor 2's class accessed to all learning materials while the students in Instructor 1' class just had access to the reading materials. Both instructors used the features of the Blackboard site for providing course schedule, eliciting assignment submissions, grading and commenting on student assignments, keeping track of student work, providing discussion board activities and sending bulk emails to students. These opportunities allowed students to (1) reach any course learning materials, assignments, and activities anywhere and anytime as long as they had an electronic device and Internet access, (2) review information such as the syllabus and lectures on their own schedule, and (3) submit their assignments in an online site. Instructor 2 also used a Blackboard site to provide a Q&A forum for assignments, deadlines, class procedures or concerns and discussion board activities, and to keep track of students' activities in this forum. The forum was very useful to find answers of course assignments, deadlines and class procedures, and to alleviate students' concerns. Both instructors effectively utilized their course Blackboard site to facilitate learning and teaching processes even though Instructor 2 used the course Blackboard site as a useful multitasking tool better than Instructor 1 by employing more components to facilitate learning and teaching.

The instructors asked leading discussion questions in the discussion forums to allow students to demonstrate their cognitive and critical thinking skills for thoughtful, in-depth reflection on a variety of questions of course topics. In order to obtain full advantage of a discussion board, the instructor should have been a role model for good discussion participation practices by being present, proactive, engaging, encouraging, motivating and questioning. Also, it

was vital for discussion assignments to prevent specific students from dominating a discussion and respond student inquiries in a timely manner. Both of the instructors did not demonstrate these fundamental principles of discussion board activities so the effect of discussion board activities was vague and the use of discussion board contributed very little to learning in the both cases.

Instructor 1 wanted to assess the students' comprehension of class topics and have them come to the class well prepared for further lectures and discussions so open-ended questions in online quizzes were prepared. The questions were open-ended because of the desire for verifying student comprehensive understanding of a subject and covering only parts of a subject in each online quiz. Utilizing online quizzes was beneficial but not extraordinary for facilitating learning and creating an effective blended learning environment. On the other hand, Instructor 2 benefitted from Google Document as a learning activity to increase student-student interactions, student-instructor interactions and student-content interactions, enhance the quality of student engagement, and complement the face-to-face activities through the use of another effective online communication strategy. However, although the use of a collaborative Google Document was a suitable and versatile tool for the students to collaborate with others, the effect of using it on facilitating learning and teaching processes was not high enough as expected because of a lack of student participation and a lack of support and encouragement from Instructor 2.

Phase Two

Phase Two took place between the 4th week and the 9th week, a total of a five-week time frame in the Fall 2016 semester. Phase Two consisted of: 1) An instructor interview, 2) The redesign of the course, 3) Observation of the learning environment, and 4) The first student instructional materials evaluation survey.

Phase Two of Case One

Interview. The purpose of the instructor design improvement interview was to unveil Instructor 1's strengths and weaknesses while teaching the blended learning course, and determine what instructional activities were effective and efficient, or ineffective and inefficient in the implemented blended learning course. Therefore, Instructor 1 and I jointly redesigned the initial implemented blended learning environment according to the results of the interview. The constant analysis method was used to analyze data collected from the interview. I requested two doctoral students in the Learning Design and Technology program to analyze the data by using open coding.

Two doctoral students in the Learning Design and Technology program and I examined the data as analysts in order to ensure coding reliability and discover all explicit and implicit themes from the raw data. Six themes emerged from the design improvement interview analyses as follows: motivation to change, benefit, expectation, ambiguity/concern, limitation and resistance. The first theme, motivation to change, refers to Instructor 1's desire to transform the traditional learning environment into the blended learning environment. The second theme, benefit, refers to if Instructor 1 gained any advantages from teaching the blended learning course according to Instructor 1's perception. The third theme, expectation, refers to what Instructor 1 anticipates while teaching a blended learning course. The fourth theme, ambiguity/concern, refers to any challenges Instructor 1 faced while teaching the blended learning course. The fifth theme, limitation, refers to Instructor 1's limitations which constrained Instructor 1 from teaching the blended learning course in the best way. The last theme, resistance, refers to reasons Instructor 1 was reluctant to teach the blended learning course. Table 12 is a representation of the themes that emerged, including a few quotes from Instructor 1 to provide evidence of each theme.

Table 12 *Summary of Design Improvement Interview Result for Phase Two of Case One*

Emerging Themes	**Sample interview comments**
Motivation to change	"Your help in accentuating the utility of my materials has been great like I like the online stuff you know I like having them because I had too much material for class. I like them doing that part online and then I don't have to cover it in class and it gets them stimulated and thinking about that. I like the group contribution into a document. I like that a lot." "I like group contribution into a document."
Benefit	"It (blended learning) made them (students) accountable…I think ultimately they learn a little bit better because they're held a little more accountable for the online discussion board." "That's (participation) a positive for the online. Everybody has to chime in….. in class I don't get as much direct participation because there just isn't time and not everybody is comfortable in that format." "You have facilitated some nice enhancements to my materials to make them have better utility for instruction."
Expectation	"I anticipate them (learning activities) being a really neat way for them to put their materials all together to look at it and reflect it's collaborative in the sense that everybody gets to see each other's responses and then we can do a better visual comparison."
Ambiguity/Concern	"There'd be like six, seven, eight different files that I have to look in and I couldn't follow the thread. I got it well enough but I haven't done this and so but just some of them I lose the thread of what they're talking about." "Discussion board takes a little bit of time to figure out where it is" "I didn't quite figure out how to do the grading on blackboard but that's me"

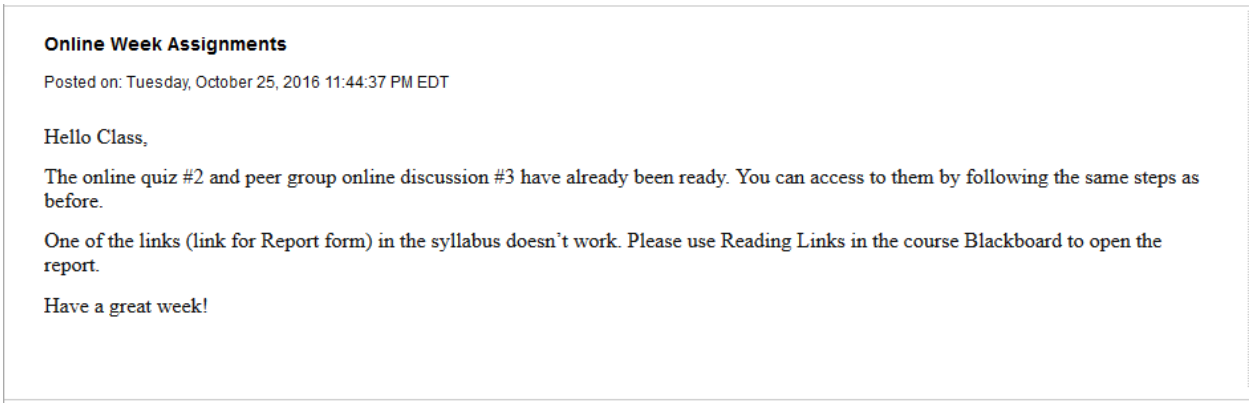
Limitation	"I would go through and make comments. I honestly don't have time for it. So, I would go through and scan and make token comments… I was reading and I did see some interesting things" "I could spend more time I probably didn't do a good enough job."
Resistance	"I'm not that impressed by the online stuff"

Redesign of the Course. The purpose of redesigning the course was to make the initial implemented blended learning course more effective and efficient. The process of redesigning the learning environment included modifying the course Blackboard site and improving instructional activities.

The Course Blackboard Site. The purpose of utilizing the course Blackboard site was to provide the instructional materials and a variety of supplemental tools to enhance face-to-face teaching and facilitate learning. Instructor 1 and I jointly designed the course Blackboard site at the beginning of the semester and we kept the same layout of the course Blackboard site in this phase. It was a straightforward and well-organized design that maximized the effectiveness of providing the course content, and minimized barriers to understanding of the content as well. A major task completed through the course Blackboard site is given as an example to show how to utilize the course Blackboard site to enhance face-to-face teaching and facilitate learning.

Instructor 1 faced a problem in the blended learning environment, which was that some links provided in the course syllabus for the reading assignments were not working. A reason why some links didn't work could be that the syllabus was given to the students in the beginning of the semester so the links to the assigned pages might have changed, or another reason why some links didn't work could be that Instructor 1 provided wrong links by mistake in the course syllabus.

However, this issue was resolved easily in this designed blended learning environment. The students conveniently access the course content through the course Blackboard site so they could reach the readings by using the renewed links provided in the Blackboard site. Also, an announcement was made about this issue on the Blackboard site, which was automatically sent to the students as an email in order to avoid any confusion. Figure 9 shows the announcement made in the course Blackboard site.



Online Week Assignments

Posted on: Tuesday, October 25, 2016 11:44:37 PM EDT

Hello Class,

The online quiz #2 and peer group online discussion #3 have already been ready. You can access to them by following the same steps as before.

One of the links (link for Report form) in the syllabus doesn't work. Please use Reading Links in the course Blackboard to open the report.

Have a great week!

Figure 9 Sample Announcement

Instructional Activities. The purpose of utilizing the instructional activities was to improve the benefits of both face-to-face and online learning. The online discussions and online quizzes were two instructional activities that were created in the previous Phase to enhance interactions between student-instructor and student-student, and promote self-paced learning. The online discussion activity was modified in this phase to enable the students to be active knowledge seekers and encourage the student create in-depth reflective responses.

The students' answers in response to a same online discussion questions were almost same for discussion board activities in the previous phase. It was because of the reason that the questions sought just factual information that could be found in direct quotations from the assigned readings. However, an online question should have allowed the students to demonstrate their higher order thinking skills such as analysis, synthesis, or interpretation while answering a discussion question.

In this phase, Instructor 1 modified the online discussion questions that required students' reflective responses such as critical analysis involving little debate, an exchange of views and thoughtful discussion. Besides, Instructor 1 was informative, motivating and encouraging, which fostered a warm online discussion environment, made the students comfortable, and facilitated the online discussions among the students. A few quotes in different discussions from Instructor 1 and Figure 10 showing a screenshot of a part of a discussion board view from one of the several discussions are below as evidence.

> "yes, we should all report. regular non-mandated reporters can be sued for aiding a criminal perhaps by NOT reporting. we can lose the same way in civil lawsuit AND our credentials"

> "discussion looking good this week! liking reading your thoughts and what you are digesting."

> "thanks for the insightful sharing of personal info, everyone. you guys are getting at some really good issues."

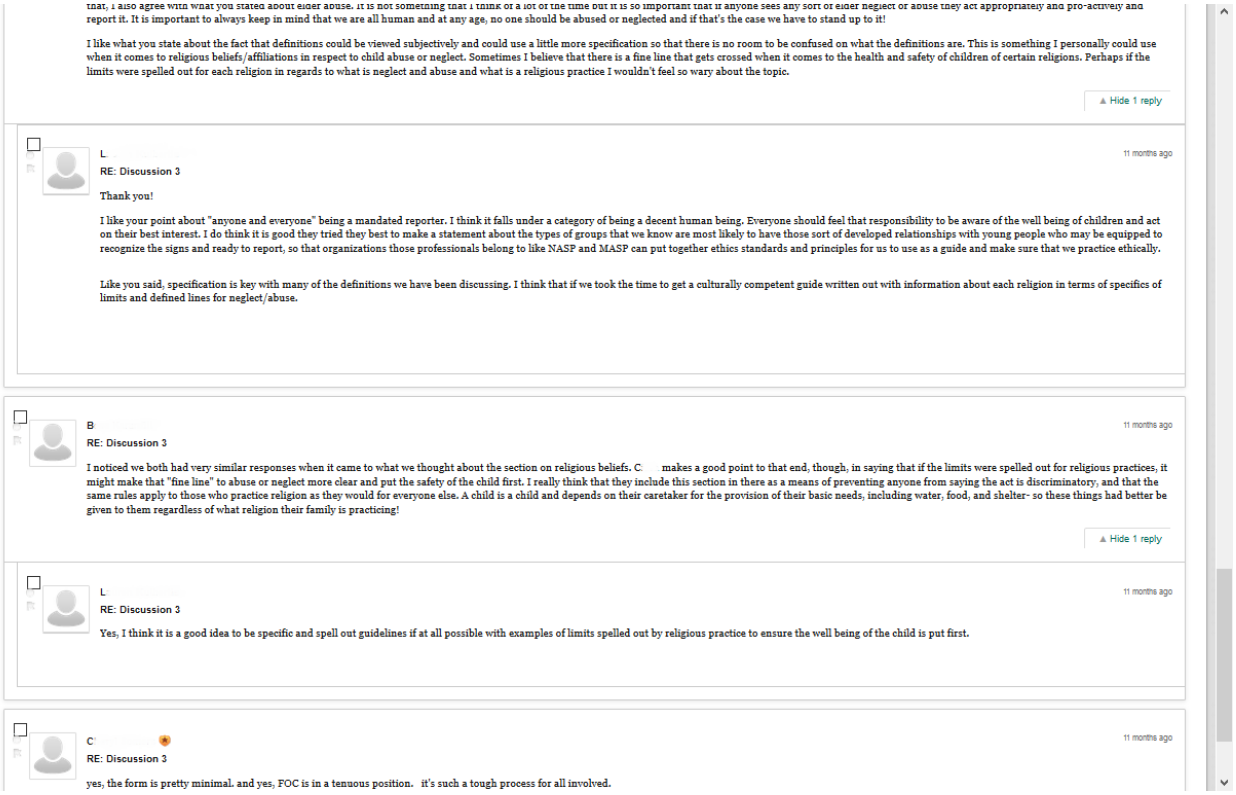


Figure 10 Sample Screenshot of a Part of a Discussion Board

Observation of the Learning Environment. I observed the learning environment by using an observation tool (Appendix G) as guidance. This observation tool provided me a useful framework to evaluate the effectiveness of the redesigned blended learning environment, and the results of observation were used to make improvements in the learning environment for the next phase of the study. Table 13 shows the results of the observation based on this framework for Phase Two of Case One in the study.

Table 13 *Results of Observation of Learning Environment for Phase Two of Case One*

Principle 1: Good practice encourages contact between students and faculty.

Evidence Found:

- Instructor 1 encouraged and fostered a healthy exchange of ideas and sharing of experiences among course participants. *
- Instructor 1 initiated contact with, or responded to, students on a regular basis in order to establish a consistent online presence in the course (and prior notice was given to students in the event that the instructor would be unavailable for more than a few days, such as might be the case during professional travel). *
- Instructor 1 responded student inquiries in more than 24 hours but better than Instructor 1's responses in the first cycle of the study. *
- Instructor 1 held regular office hours, and by appointment, that can be F2F in the instructor office or mediated by technology (e.g., the telephone, chat areas, Adobe Connect Pro)

Strengths:

- Instructor 1 clearly stated requirements for course interactions.
- Instructor 1 showed her respect toward the students such as her style and language were appropriate and encouraging when replying to students' messages or commenting on their work
- Instructor 1 replied to student's emails immediately
- Instructor 1 clearly stated netiquette expectations with regard to online communication
- Instructor 1 provided a prominent announcement area to actively communicate important up-to-date course information to students, such as reminders of impending assignment due dates, curriculum changes, scheduled absences, etc. *
- Instructor 1 asked challenging questions that prompt students to think more deeply. *
- Instructor 1 strived to improve her navigational skills for herself and the students to be able to give easily understandable navigational instructions. *

Areas for Improvement:

- Instructor 1 should provide students with interaction space for study groups, "hall way conversations," etc.

Principle 2: Good practice develops reciprocity and cooperation among students.

Evidence Found:

- Instructor 1 provided regular opportunities for students to engage in the following activities:
    - Formal discussions of course topics
    - Collaborative course assignments
    - Study groups
- Instructor 1 indicated an explanation of the criteria for "good" discussion participation in the course syllabus and the F2F class.
- Instructor 1 provided discussion prompts that help to guide and elicit student participation in discussion activities. *
- Instructor 1 facilitated class discussions by encouraging, summarizing, etc. *
- Instructor 1 created a friendly atmosphere that reduced students' hesitancy and helped them make personal connections.

Strengths:

- Instructor 1 made class atmosphere conductive to student learning. Instructor 1 promptly responded to students' emails and promoted peer-to peer collaboration.
- Instructor 1 prevented specific students from dominating discussion.
- Instructor 1 attended respectfully to student comprehension and puzzlement. *
- Instructor 1 corrected to wrong answers constructively.
- Instructor 1 provided student interaction spaces for study groups in the course blackboard site and F2F classes.

Areas for Improvement:

- Instructor 1 should be a modeling of good discussion participation practices.
- Instructor 1 should be more present, proactive, and engaged in the course blackboard site.
- Instructor 1 should provide a variety of interaction opportunities for students.

Principle 3: Good practice encourages active learning.

Evidence Found:

- Instructor 1 involved students in the following student activities:
    - Active use of writing, speaking, and other forms of self-expression
    - Engagement in collaborative learning activities

- Dialogue pertaining to scholarly conduct *
- Instructor 1 assigned students to think, talk, or write about their learning

Strengths:

- Instructor 1 made explicit statements drawing student attention to key ideas. Discussions and assignments were designed to focus on key ideas in general. Each constituted discussion group was directed to work collaboratively to respond discussion board questions and each student was required to do assignments on her/his own.
- Instructor 1 encouraged students to respond to their peers throughout the discussions. *
- Instructor 1 conveyed the purpose of each assignment. *

Areas for Improvement:

- Instructor 1 should provide the following student activities:
  - Opportunity for information gathering, synthesis, and analysis in solving problems (including the use of library, electronic/computer and other resources, and quantitative reasoning and interpretation, as applicable)
- Instructor 1 should provide opportunities for students to "customize" their learning by tailoring assignments to their personal and professional interests and needs.
- Instructor 1 assigned students to reflect, relate, organize, apply, synthesize, or evaluate information

Principle 4: Good practice gives prompt feedback.

Evidence Found:

- Instructor 1 provided information about course feedback methods and standards on the course syllabus.
- Instructor 1 provided meaningful feedback on student assignments within a reasonable time frame. *
- Instructor 1 provided assignment feedback that was clear, positive, specific, and focused on observable behavior
- Instructor 1 explicitly stated assignment grading criteria in the course syllabus.
- Instructor 1 provided an up-to-date, student-accessible course gradebook.

Strengths:

- Instructor 1 made class atmosphere conductive to student learning. Instructor 1 promptly responded to students' emails and promoted peer-to peer collaboration
- Instructor 1 used positive reinforcement to encourage student participation and intellectual risk-taking. *

Areas for Improvement:

- Instructor 1 should create an open discussion forum where students can ask questions, and receive instructor feedback, about course content and activities.

Principle 5: Good education emphasizes time on task.

Evidence Found:

- Instructor 1 provided a published course schedule that outlined topics to be covered and assignment due dates so students would plan their workload accordingly.
- Instructor 1 indicated course-specific study tips that provided students with strategies for utilizing their time well.
- Instructor 1 provided assignment feedback with information on where students focus on their studies when they digress the main topic. *
- Instructor 1 provided assignment due dates and timeframes by taking into account the nature of the target audience. For example, a course targeted to working adult professionals would incorporate a weekend into an assignment timeframe.
- Instructor 1 indicated information in the course syllabus that provided an estimate of the amount of time students should spend on the course

Strengths:

- Instructor 1 prepared a detailed syllabus. It was very strict and clear to state policies, requirements, and procedures for the course. It also indicated the requirements and expectations with due dates of exams, assignments, and papers.
- Instructor 1 was organized.
    - Organization of content was clear.
    - Course Blackboard site was designed and organized very well.
    - It was free of errors and dead links.
    - Navigation of the course site was easy.
    - Instructional materials were easily accessible and usable.
- Instructor 1 provided explanation of assignments and their rubrics were clear and detailed. Introduction to assignments was included. Student learning outcomes were included.

Principle 6: Good practice communicates high expectations.

Evidence Found:

- Instructor 1 explicitly communicated every student what skills and knowledge they needed to have in order to be successful in the course.
- Instructor 1 provided clear explanation of course learning goals and how assignments were designed to help students achieve those goals.
- Instructor 1 indicated examples and non-examples of high quality work, along with a discussion of the differences between these. *
- Instructor 1 showed examples of student work that demonstrated advancement toward learning goals.
- Instructor 1's assessment strategy provided more informative and constructive feedback to students. *

- Instructor 1 asked critical questions when communicating with students about course assignments and activities. *

Strengths:

- Instructor 1 appropriately provided instructional aid to facilitate important points
- Instructor 1 constituted a grading policy which was easy to understand and demonstrates progress in course.
- Instructor 1 clearly stated learning outcomes of the course.
- Instructor 1 showed her enthusiasm with explanation of new concepts and elaboration of complex information. *

Areas for Improvement:

- Instructor 1 should be able to motivate and encourage students to answer the questions that require more complex solutions
- Instructor 1 should provide frequent and detailed feedback on students' assignments through written explanations.
-

Principle 7: Good practice respects diverse talents and ways of learning.

Evidence Found:

- Instructor 1 used a variety of assessment tools that gauged student progress.
- Instructor 1 provided supplemental online materials to students who lacked prerequisite knowledge or who would benefit from having content presented in an alternative manner.
- Instructor 1 stated a policy for accommodations on the course syllabus.
- Instructor 1 created a positive online climate where students were encouraged to seek assistance with course content and learning activities if needed. *

Strengths:

- Presentation of content was appropriate. The links Instructor 1 provided work and connected to appropriate areas.
- Instructor 1's method of presentation was appropriate. Lecture, discussion and quiz were suitable for the students.
- Instructor 1 provided current tools and technologies that enhanced learning.
- Instructor 1 made distinctions between fact and opinion and presented divergent viewpoints. *

Areas for Improvement:

- Instructor 1 should provide alternative assignment options that allow students to demonstrate their progress in a manner that is best conducive to their talents.
- Instructor 1 should provide timely, corrective feedback for online activities.

* What have been changed in comparison to the learning environment in Phase One.

Instructional Materials Evaluation Survey. The first student Instructional Materials Evaluation Survey was administered in the fifth week of the semester in order to estimate students' motivational attitude toward the use of instructional activities and tools. The results of the survey helped me determine a need of altering the use of instructional activities and tools in the learning environment. Eleven students consisting of one male and ten female participants agreed to complete the survey. Coding of the quantitative data, to analyze the survey data collected from the students, was the following format. Each question from 1 – 36 was documented with the following codes: 1 = Not True, 2 = Slightly True, 3 = Moderately True, 4 = Mostly True, 5 = Very True, except the reverse questions. Each reverse question was documented by reversing the response of 5 becoming 1, 4 becoming 2, 3 staying the same at 3, 2, becoming 4 and 1 becoming 5. Keller (2010) states that the minimum score on the Course Interest Survey is 36 and the highest score is 180 with a midpoint of 108, and there is not normal distribution of responses. The students (n=11) had a mean score of 117. The score suggests that the students' reactions to the use of instructional materials were positive in the learning environment at the fifth week of the semester.

Phase Two of Case Two

Interview. The purpose of the instructor design improvement interview was to unveil Instructor 2's strengths and weaknesses while teaching the blended learning course, and determine what instructional activities were effective and efficient or ineffective and inefficient in the implemented blended learning course. Therefore, Instructor 2 and I jointly redesigned the initial implemented blended learning environment according to the results of the interview. The constant

analysis method was used to analyze data collected from the interview. I requested two doctoral students in the Learning Design and Technology program to analyze the data by using open coding.

Two doctoral students in the Learning Design and Technology program and I examined the data as analysts in order to ensure coding reliability and discover all explicit and implicit themes from the raw data. Six themes emerged from the design improvement interview analyses as follows: motivation to change, benefit, expectation, ambiguity/concern, limitation and resistance. The first theme, motivation to change, refers to Instructor 2's desire to transform the traditional learning environment into the blended learning environment. The second theme, benefit, refers to if Instructor 2 gained any advantages from teaching the blended learning course according to Instructor 2's perception. The third theme, expectation, refers to what Instructor 2 anticipates while teaching a blended learning course. The fourth theme, ambiguity/concern, refers to any challenges Instructor 2 faced while teaching the blended learning course. The fifth theme, limitation, refers to Instructor 2's limitations which constrained Instructor 2 from teaching the blended learning course in the best way. The last theme, resistance, refers to reasons Instructor 2 was reluctant to teach the blended learning course. Table 14 is a representation of the themes that emerged, including a few quotes from Instructor 2 to provide evidence of each theme.

Table 14 *Summary of Design Improvement Interview Result for Phase Two of Case Two*

Emerging Themes	**Sample interview comments**
Motivation to change	"The reading alone is difficult so if they (students) were reading and discussing and reading and discussing maybe it would be more interactive." "They highlight and talk about what they don't know (online discussion) but they don't have time to talk about it in class"

Benefit	"One thing that I've noticed coming out of this is the Google Docs has been very value-added experience for this class." "I think the Google Doc is one element that has given them a different way to engage" "That (design of the course blackboard site) seems to be a very well-organized way of keeping everything together. If I make it as easy as possible for them to organize material then they're happy. They don't have to work at finding like they used to." "I read the Google Doc. and what I found is that has allowed me to figure out what students pay attention to what they find interesting and what they take away from each class."
Expectation	"there's an expectation if students don't know how to do it you've been available to provide supplemental instruction."
Ambiguity/Concern	"there's something about the discussion board that is not appealing to this group of students because it couldn't get full participation." "I think they feel overwhelmed with additional outside work" "Somebody who braves enough to put it out there and then everybody sort of jumps in and there might be a difference when you do it online that nobody's going to be the first one"
Limitation	"I don't have as much time available to spend on discussion board" "I just haven't put the energy or the time"
Resistance	"I have not been a good online instructor actually because of the way this class is structured and the nature of this content and the type of people they are, they prefer in-person interaction and so the discussion is happening on the blackboard but they would actually prefer it in person."

Redesign of the Course. The purpose of redesigning the course was to make the initial implemented blended learning course more effective and efficient. The process of redesigning the learning environment included modifying the course Blackboard site and improving instructional activities.

The Course Blackboard Site. The purpose of utilizing the course Blackboard site was to provide the instructional materials and a variety of supplemental tools to enhance face-to-face teaching and facilitate learning. Instructor 2 and I jointly designed the course Blackboard site at the beginning of the semester and we kept the same layout of the course Blackboard site in this phase. It was a straightforward and well-organized design that maximized the effectiveness of providing the course content and minimized barriers to understanding of the content as well. A major task completed through the course Blackboard site is given as an example to show how to utilize the course Blackboard site to enhance face-to-face teaching and facilitate learning.

The major task was that the students submitted all their assignments through the course Blackboard site and Instructor 2 gave feedback and posted grades for their assignments through the site. The "Assignment and "Grade Center" features of the course Blackboard site were prepared at the initial design of the course Blackboard site but there weren't any assignments in the previous phase to utilize these Blackboard features. In Phase Two, Instructor 2 began taking advantage of these features. These convenient features enabled Instructor 2 to easily collect assignments and interact with students by posting the grades and giving feedback for each student separately. Also, the students comfortably accessed their graded and commented assignments through the course Blackboard site. Figure 11 shows a part of the assignment page in which the students were able to receive and submit assignments.

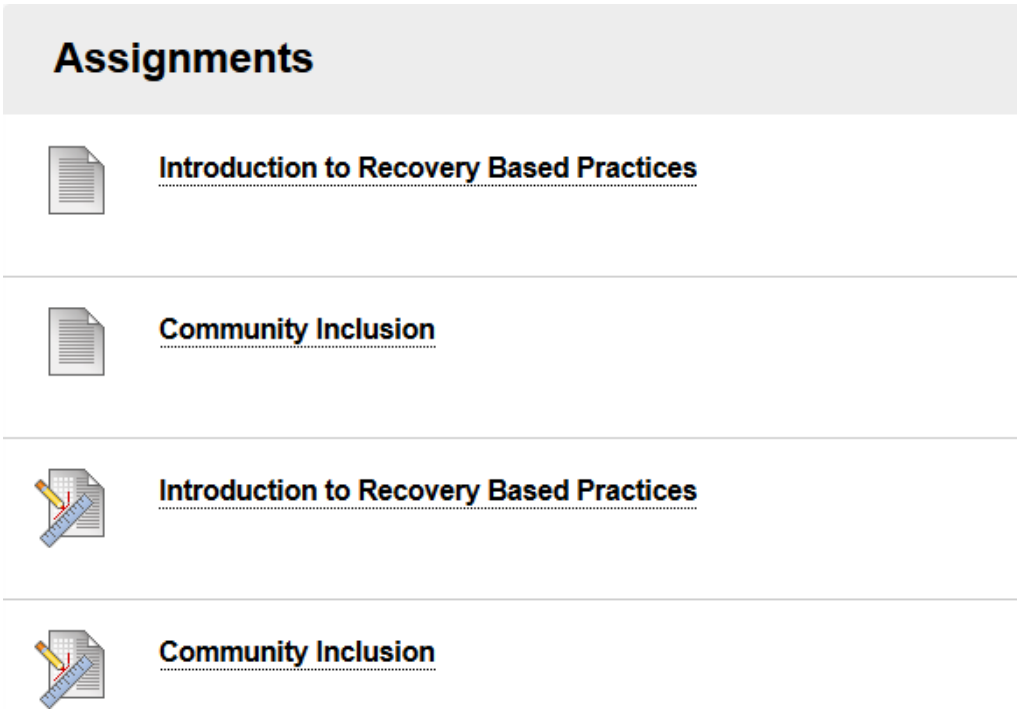


Figure 11 Sample Part of the Assignment Page

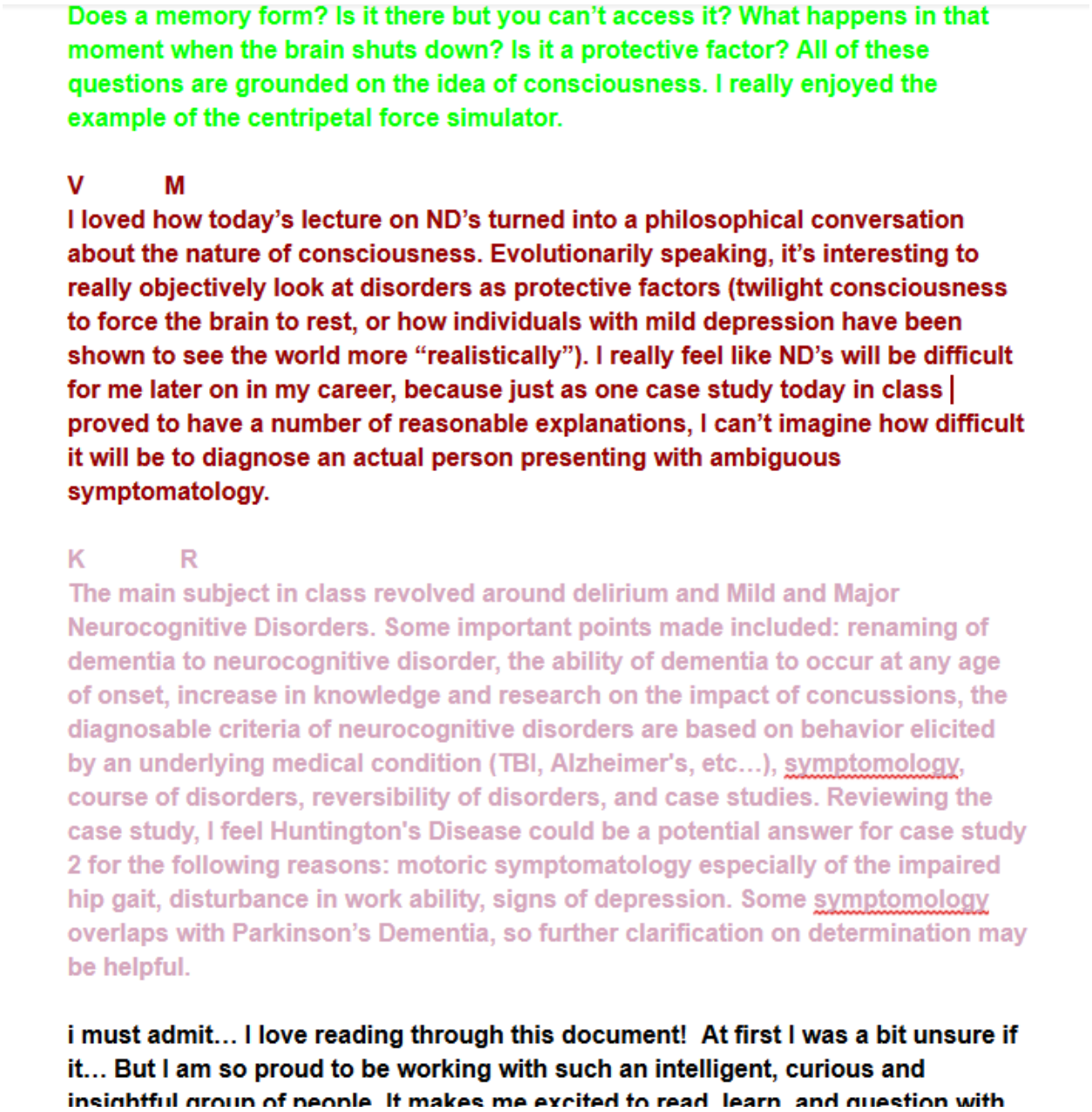
Instructional Activities. The purpose of utilizing the instructional activities was to improve the benefits of both face-to-face and online learning. The online discussions and a collaborative Google Document writing were two instructional activities that were created in the previous Phase to improve interaction between instructor-student, student-student and student-content, engage the students in online knowledge construction, and promote self-paced learning. However, Instructor 2 didn't spend enough time to effectively utilize these instructional activities in the previous phase. Instructor 2 began devoting more time in order to keep track of student performance, provide prompt feedback on student discussions and assignments, and encourage students to be active learners. In addition to that, Instructor 2 and I jointly created another instructional activity which was the multiple-choice quizzes.

For the enhancement of the online discussions and a collaborative Google Document writing, Instructor 2 spent more time to reply student inquires in the peer group discussion forums,

and to interact with the students in the Google Document. In parallel with increasing Instructor 2' presence in both of the online activities, student engagement in the activities, and interaction between instructor-student, student-student and student-content were exponentially increased in the blended learning course. For instance, Instructor 2 realized that the Google Docs Take Away was a very beneficial document and stated inside of the Google Document as following:

> "I must admit… I love reading through this document! At first, I was a bit unsure if it… But I am so proud to be working with such an intelligent, curious and insightful group of people. It makes me excited to read, learn, and question with you.
>
> Thank you for posting such wonderful take always… it really helps me to understand what we focus on in class- what stands out and how you integrate new knowledge with existing sources. Keep it up! This is an amazing document."

Figure 12 shows a screenshot of a part of the Google Document view which also illustrates some of using different colors chosen by students for discerning each student's contributions as I indicated earlier in this chapter.


Does a memory form? Is it there but you can't access it? What happens in that moment when the brain shuts down? Is it a protective factor? All of these questions are grounded on the idea of consciousness. I really enjoyed the example of the centripetal force simulator.

V M
I loved how today's lecture on ND's turned into a philosophical conversation about the nature of consciousness. Evolutionarily speaking, it's interesting to really objectively look at disorders as protective factors (twilight consciousness to force the brain to rest, or how individuals with mild depression have been shown to see the world more "realistically"). I really feel like ND's will be difficult for me later on in my career, because just as one case study today in class | proved to have a number of reasonable explanations, I can't imagine how difficult it will be to diagnose an actual person presenting with ambiguous symptomatology.

K R
The main subject in class revolved around delirium and Mild and Major Neurocognitive Disorders. Some important points made included: renaming of dementia to neurocognitive disorder, the ability of dementia to occur at any age of onset, increase in knowledge and research on the impact of concussions, the diagnosable criteria of neurocognitive disorders are based on behavior elicited by an underlying medical condition (TBI, Alzheimer's, etc…), symptomology, course of disorders, reversibility of disorders, and case studies. Reviewing the case study, I feel Huntington's Disease could be a potential answer for case study 2 for the following reasons: motoric symptomatology especially of the impaired hip gait, disturbance in work ability, signs of depression. Some symptomology overlaps with Parkinson's Dementia, so further clarification on determination may be helpful.

i must admit… I love reading through this document! At first I was a bit unsure if it… But I am so proud to be working with such an intelligent, curious and insightful group of people. It makes me excited to read, learn, and question with

Figure 12 Sample Part of the Google Document

The new instructional activity was the multiple-choice quizzes. The aim of creating this activity was to make a comprehensive evaluation of student knowledge. The online quizzes were suitable to assess students' comprehension of details and specific knowledge from multiple chapters. Instructor 2 and I jointly prepared the quizzes by utilizing the "Assessment" feature of

the course Blackboard site. We modified the settings of this Blackboard feature such as editing the test name, test description, test duration, test due date, test availability and the various forms of feedback on returning to students' test result. For instance, Instructor 2 set the timer for exam duration and allowed the students to take the exam once a time during a specific time frame. However, some students faced a problem while taking the exam. Instructor 2 requested my help with coping with issue. At Instructor 2's request, I assisted Instructor 2 with giving a permit to these students to take the exam again.

Observation of the Learning Environment. I observed the learning environment by using an observation tool (Appendix G) as guidance. This observation tool provided me a useful framework to evaluate the effectiveness of the redesigned blended learning environment, and the results of observation were used to make improvements in the learning environment for the next phase of the study. Table 15 shows the results of the observation based on this framework for Phase Two of Case Two in the study.

Table 15 *Results of Observation of Learning Environment for Phase Two of Case Two*

Principle 1: Good practice encourages contact between students and faculty.

Evidence Found:

- Instructor 2 encouraged and fostered a healthy exchange of ideas and sharing of experiences among course participants.
- Instructor 2 initiated contact with, or responded to, students on a regular basis in order to establish a consistent online presence in the course (and prior notice was given to students in the event that the instructor would be unavailable for more than a few days, such as might be the case during professional travel).
- Instructor 2 held regular office hours, and by appointment, that can be F2F in the instructor office or mediated by technology (e.g., the telephone, chat areas, Adobe Connect Pro)

Strengths:

- Instructor 2 provided a prominent announcement area to communicate important up-to-date course information to students, such as reminders of impending assignment due dates, curriculum changes, scheduled absences, etc.

- Instructor 2 provided students with interaction space for study groups, "hall way conversations," etc.
- Instructor 2 clearly stated requirements for course interactions.
- Instructor 2 showed her respect toward the students such as her style and language were appropriate and encouraging when replying to students' messages or commenting on their work
- Instructor 2 replied to student's emails immediately
- Instructor 2 clearly stated netiquette expectations with regard to online communication
- Instructor 2 asked challenging questions that prompt students to think more deeply
- Instructor 2 was able to improve her navigational skills for herself and the students to be able to give easily understandable navigational instructions.

Areas for Improvement:

- Instructor 2 should respond student inquiries in a timely manner in the course blackboard site.
- Instructor 2 should be present and engaged in the course blackboard site.

Principle 2: Good practice develops reciprocity and cooperation among students.

Evidence Found:

- Instructor 2 provided regular opportunities for students to engage in the following activities:
    - Formal and/or informal discussions of course topics
    - Collaborative course assignments
    - Study groups
- Instructor 2 provided discussion prompts that helped to guide and elicit student participation in class discussion activities.
- Instructor 2 created a friendly atmosphere that reduced students' hesitancy and helped them make personal connections.
- Instructor 2 indicated a clear explanation of the criteria for "good" discussion participation in the syllabus.
- Instructor 2 facilitated discussions by encouraging, probing and questioning. *
- Instructor 2 made the class atmosphere conductive to student learning. Instructor 2 responded to students' emails and other inquires, and promoted peer-to-peer collaboration. *
- Instructor 2 prevented specific students from dominating a discussion. *
- Instructor 2 corrected to wrong answers constructively. *
- Instructor 2 was proactive in the course blackboard site. *

Strengths:

- Instructor 2 provided student interaction space for study groups, "hall way conversations," etc.

- Instructor 2 provided student interaction spaces for study groups in the course blackboard site and F2F classes.
- Instructor 2 used positive reinforcement to encourage student participation.

Areas for Improvement:

- Instructor 2 should demonstrate modeling of good discussion participation practices in the course blackboard site.
- Instructor 2 should be more present and engaged in the course blackboard site.

Principle 3: Good practice encourages active learning.

Evidence Found:

- Instructor 2 involved students in the following activities
  - Active use of writing, speaking, and other forms of self-expression
  - Engagement in collaborative learning activities
  - Dialogue pertaining to social behavior and scholarly conduct
- Instructor 2 assigned students to reflect, relate, organize, apply and evaluate information. *
- Instructor 2 made explicit statements drawing student attention to key ideas. Discussions and assignments were designed to focus on key ideas in general. Each constituted discussion group was directed to work collaboratively to respond discussion board questions and each student was required to do assignments on her own.
- Instructor 2 conveyed the purpose of each assignment. *

Strengths:

- Instructor 2 assigned students to think, talk, and write about their learning.
- Instructor 2 encouraged students to respond to their peers throughout the discussions. *
- Instructor 2 provided the following activit(ies):
  - Opportunity for information gathering, synthesis, and analysis in solving problems (including the use of library, electronic/computer and other resources, and quantitative reasoning and interpretation, as applicable) *
- Instructor 2 provided opportunities for students to "customize" their learning by tailoring assignments to their personal and professional interests and needs. *

Areas for Improvement:

- Instructor 2 should be more present in online learning environment to encourage students being active and engaged.
- Instructor 2 should monitor and guide students who can't keep up with their classmates.

Principle 4: Good practice gives prompt feedback.

Evidence Found:

- Instructor 2 provided information about course feedback methods and standards on the course syllabus.
- Instructor 2 provided assignment feedback that was clear, positive, specific, and focused on observable behavior.
- Instructor 2 explicitly stated individual assignment grading criteria in the course syllabus.
- Instructor 2 provided an up-to-date, student-accessible course gradebook.
- Instructor 2 provided meaningful feedback on student assignments in reasonable time frame in the course blackboard site. *

Strengths:

- Instructor 2 provided an open discussion forum where students could ask questions, and receive instructor feedback, about course content and activities.
- Instructor 2 made class atmosphere conductive to student learning. Instructor 2 promptly responded to students emails and other inquires, promoted peer-to-peer collaboration. *
- Instructor 2 provided opportunity for students to submit drafts of assignments for instructor feedback. *
- Instructor 2 used positive reinforcement to encourage student participation and intellectual risk-taking. *

Areas for Improvement:

- Instructor 2 should present examples of student work that demonstrated advancement toward learning goals.

Principle 5: Good education emphasizes time on task.

Evidence Found:

- Instructor 2 provided a published course schedule that outlined topics to be covered and assignment due dates so students would plan their workload accordingly.
- Instructor 2 indicated course-specific study tips that provided students with strategies for utilizing their time well.
- Instructor 2 provided assignment due dates and timeframes by taking into account the nature of the target audience. For example, a course targeted to working adult professionals would incorporate a weekend into an assignment timeframe.
- Instructor 2 indicated information in the course syllabus that provided an estimate of the amount of time students should spend on the course.
- Instructor 2 gave assignment feedback that provided students with information on where to focus their studies when students digress the main topic. *

Strengths:

- Instructor 2 prepared a detailed syllabus. It was very strict and clear to state policies, requirements, and procedures for the course. It also indicated the requirements and expectations with due dates of exams, assignments, and papers.
- Instructor 2 was organized.

  - Organization of content was clear.
  - Course Blackboard site was designed and organized very well.
  - It was free of errors and dead links.
  - Navigation of the course site was easy.
  - Instructional materials were easily accessible and usable.
- Instructor 2 provided clear and detailed explanation of assignments and their rubrics. Introduction to assignments were included. Student learning outcomes were included.

Principle 6: Good practice communicates high expectations.

Evidence Found:

- Instructor 2 explicitly communicated every student what skills and knowledge they needed to have in order to be successful in the course.
- Instructor 2 provided clear explanation of course learning goals and how assignments were designed to help students achieve those goals.
- Instructor 2 motivated and encouraged students to answer the questions that require more complex solutions
- Instructor 2 asked critical and probing questions when communicating with students about course assignments and activities.
- Instructor 2 appropriately provided instructional aid to facilitate important points.

Strengths:

- Instructor 2 constituted a grading policy which was easy to understand and demonstrated progress in course.
- Instructor 2 clearly stated learning outcomes of the course.
- Instructor 2's assessment strategy provided more informative and constructive feedback to students.
- Instructor 2 showed her enthusiasm with explanation of new concepts and elaboration of complex information. *

Areas for Improvement:

- Instructor 2 should provide frequent and detailed feedback on students' assignments through written explanations.
- Instructor 2 should provide examples of student work that demonstrated advancement toward learning goals.
- Instructor 2 should show examples and non-examples of high quality work, along with a discussion of the differences between these.

Principle 7: Good practice respects diverse talents and ways of learning.

Evidence Found:

- Instructor 2 utilized a variety of assessment tools that gauged student progress.
- Instructor 2 stated a clear policy for accommodations in the course syllabus.
- Instructor 2 provided alternative assignment options that allowed students to demonstrate their progress in a manner that was best conductive to their talents.

- Instructor 2 created a positive online climate where students were encouraged to seek assistance with course content and learning activities if needed.
- Instructor 2 provided current tools and technologies that enhanced learning.

Strengths:

- Instructor 2 provided supplemental online materials the students who lacked prerequisite knowledge or who would benefit from having content presented in an alternative manner.
- Presentation of content was appropriate. The links the instructor-2 provided worked and connected to appropriate areas.
- Instructor 2's method of presentation was appropriate. Lecture, discussion and Google activities were suitable for the students
- Instructor 2 created a positive online climate where students were encouraged to seek assistance with course content and learning activities if needed. *

Areas for Improvement:

- Instructor 2 should provide timely, corrective feedback for online activities.

* What have been changed in comparison to the learning environment in Phase One.

Instructional Materials Evaluation Survey. The first student Instructional Materials Evaluation Survey was administered in the fifth week of the semester in order to estimate students' motivational attitude toward the use of instructional activities and tools. The results of the survey helped me determine a need of altering the use of instructional activities and tools in the learning environment. Twenty-three students consisting of two male and twenty-one female participants agreed to complete the survey. Coding of the quantitative data, to analyze the survey data collected from the students, was the following format. Each question from 1 – 36 was documented with the following codes: 1 = Not True, 2 = Slightly True, 3 = Moderately True, 4 = Mostly True, 5 = Very True, except the reverse questions. Each reverse question was documented by reversing the response of 5 becoming 1, 4 becoming 2, 3 staying the same at 3, 2, becoming 4 and 1 becoming 5. Keller (2010) states that the minimum score on the Course Interest Survey is 36 and the highest score is 180 with a midpoint of 108, and there is not normal distribution of responses. The students

(n=23) had a mean score of 138. The score suggests that the students' reactions to the use of instructional materials were positive in the learning environment at the fifth week of the semester.

Summary of Phase Two of Both Cases

Through using the observation tool, the findings of the observation were previously given for Phase Two of both cases in detail. According to the observation findings, the instructors displayed some key competencies in teaching a blended learning course while they also lacked some key competencies to make a blended learning course an effective and efficient learning environment. Based on a collection of qualitative observation data, Table 16 shows the summary of the strengths and weaknesses of the instructors.

Table 16 *Summary of Strengths and Weaknesses of the Instructors in Phase Two of Each Case*

Phase Two of Both of Cases		
Feedback for the Instructor	**Instructor 1**	**Instructor 2**
Strengths	-Engaging students in collaborative learning activities and active use of writing and speaking activities -Providing a well-organized course Blackboard site including organized content, free of errors and dead links, easy navigation, and easily accessible and usable learning materials -Providing assignment feedback that was clear, positive, specific, and focused on observable behavior -Responding to students' emails and promoting peer-to peer collaboration -Utilizing a variety of assessment tools -Providing supplemental online materials -Making explicit statements drawing student attention to key ideas -Assigning students to think, talk, and write about their learning	-Providing student interaction spaces for study groups -Engaging students in collaborative learning activities, and active use of writing and speaking activities -Providing a well-organized course Blackboard site including organized content, free of errors and dead links, easy navigation, and easily accessible and usable learning materials -Providing assignment feedback that was clear, positive, specific, and focused on observable behavior -Responding to students' emails and promoting peer-to peer collaboration -Utilizing a variety of assessment tools -Providing supplemental online materials -Making explicit statements drawing student attention to key ideas

	-Encouraging and fostering a healthy exchange of ideas and sharing of experiences among course participants in online learning environment -Preventing specific students from dominating a discussion -Striving to improve the navigational skills for itself and the students to be able to give easily understandable navigational instructions -Asking challenging questions that prompt students to think more deeply -Providing a prominent announcement area to communicate important up-to-date course information to students -Conveying the purpose of each assignment -Providing assignment feedback with information on where students focus on their studies when they digress the main topic -Providing more informative and constructive feedback to students such as making distinctions between fact and opinion and presented divergent viewpoints -Asking critical questions when communicating with students about course assignments and activities -Providing meaningful feedback on student assignments in reasonable time frame -Guiding and eliciting student participation -Facilitating class discussions by encouraging, summarizing, etc. -	-Assigning students to think, talk, and write about their learning -Encouraging and fostering a healthy exchange of ideas and sharing of experiences among course participants in online learning environment -Preventing specific students from dominating a discussion -Striving to improve the navigational skills for itself and the students to be able to give easily understandable navigational instructions -Asking challenging questions that prompt students to think more deeply -Providing a prominent announcement area to communicate important up-to-date course information to students -Conveying the purpose of each assignment -Providing assignment feedback with information on where students focus on their studies when they digress the main topic -Providing more informative and constructive feedback to students such as making distinctions between fact and opinion and presented divergent viewpoints -Asking critical questions when communicating with students about course assignments and activities -Providing meaningful feedback on student assignments in reasonable time frame -Guiding and eliciting student participation -Providing an open discussion forum where students could ask questions, and receive instructor feedback, about course content and activities

		-Providing alternative assignment options - Providing opportunities for students to "customize" their learning, and information gathering, synthesis, and analysis in solving problems
Weaknesses	-Being present, proactive and engaged in the course blackboard site -Demonstrating modeling of good discussion participation practices - Providing opportunities for students to "customize" their learning, and information gathering, synthesis, and analysis in solving problems -Providing frequent and detailed feedback -Opening a discussion forum where students can ask questions, and receive instructor feedback, about course content and activities -Providing alternative assignment options	-Being present and engaged in the course blackboard site -Demonstrating modeling of good discussion participation practices -Responding student inquiries in a timely manner -Providing frequent and detailed feedback

Both of the instructors accomplished utilizing the practices of blended learning better than they did in Phase 1. As indicated in Table 16, both instructors designed the course Blackboard site to provide feedback, elicit student participation, announce important dates, such as the due date for an assignment, which also promoted a healthy exchange of ideas and experiences among students and encouraged them to be engaged in active and collaborative learning activities such as discussion activities. Even though both instructors were good at providing informative and constructive feedback, preventing specific students from dominating a discussion and facilitating discussions by redirecting students to focus on the discussion topics, Instructor 2 outperformed Instructor 1 in teaching a blended learning course overall. Instructor 2's additional learning

opportunities provided personalized learning assignments and extra interaction spaces for students. However, both of the instructors should have been more present, proactive and engaging to be a good model for asynchronous discussion participation. Both instructors should have provided detailed feedback on student assignments and inquiries in a timely manner.

In both cases, digital learning resources were used in a variety of ways to support teaching and learning. Table 17 shows the purpose of utilized learning resources and the level of benefits provided for the learning environments.

Table 17 *Summary of Learning Resources Used in Phase Two of Both Cases*

Use of Resource	**Instructor 1**		**Instructor 2**	
	Purpose of Use	**Level of Benefit**	**Purpose of Use**	**Level of Benefit**
Discussion Board	Allowing students to demonstrate their cognitive and critical thinking skills for thoughtful, in-depth reflection on a variety questions of course topics	Moderate	Allowing students to demonstrate their cognitive and critical thinking skills for writing thoughtful, in-depth reflections on a variety questions of course topics and Solving case scenarios under the instructor's guidance	Moderate
Open-Ended Question Quiz	Assessing student comprehensive understanding of topics in a chapter	Moderate	N/A	N/A
Google Document	N/A	N/A	Enhancing student engagement and complementing the face-to-face activities through the use of another effective online communication strategy	High
Multiple Choice Quiz	N/A	N/A	Testing students' comprehension of details and specific knowledge from multiple chapters	Moderate

Course Blackboard Site	-Providing content such as articles, reports, and case scenarios Providing schedule, and due dates -Assignment submission -Keeping track of student work, and sending bulk emails to the -Discussion Board activities -Grading and Commenting on student assignments - Providing file exchange areas	Moderate	-Providing content such as textbooks, articles, reports, case scenarios etc. and all learning materials, -Sharing additional learning materials such as PowerPoint presentations, video lectures, visual aids, and website links -Providing schedule, and due dates -Assignment submission -Keeping track of student work, and sending bulk emails to the students -Discussion Board activities - Providing a Q&A forum for assignments, deadlines, class procedures or concerns -Grading and Commenting on student assignments -Providing file exchange areas -Providing multiple choice quizzes	High

Table 17 shows the similarities and differences of the use of the instructional resources. The main similarity was the utilization of discussion board activities. Both instructors used discussion board activities to give a chance to students to exhibit their cognitive and critical thinking skills for thoughtful, in-depth reflection on a variety of questions related to course topics. In addition to that, Instructor 2 had students solve complex problems through case scenarios under the instructor's guidance. While Instructor 1 assigned students with online open-ended question quizzes to evaluate student comprehensive understanding, Instructor 2 tested students' comprehension of details and specific knowledge through online multiple-choice quizzes.

Instructor 2 also utilized the course Blackboard site more comprehensively than Instructor 1 for providing educational materials, improving communication, and tracking and assessing students. The major difference between both cases was that Instructor 2 provided a collaborative Google Document writing activity to foster student engagement and complement the face-to-face activities.

According to the results of Phase Two of both cases, a part of the first research question of the study, "What practices are associated with making a blended learning course effective and efficient?", can be addressed. However, there will be detailed answers and discussions for the research questions according to the results of all intervention phases of both cases in the next chapter.

It was very beneficial for both cases to use a course Blackboard site for providing a variety of course documents such as textbooks, articles, reports, case scenarios, PowerPoint presentations, video lectures, and visual aids. There were also many advantages of using a course Blackboard site for the instructors. The instructors facilitated student communications, collected their assignments in an easy way, commented and graded their assignments, developed quizzes and tested them, and created online discussion spaces. Both of the instructors took advantages of employing the course Blackboard site. However, the degree of benefits of using the Blackboard site was different between two cases. Instructor 2 utilized the course Blackboard site better than Instructor 1. One of the most significant differences between two cases was that Instructor 2 provided an open discussion forum where students could ask questions and receive instructor feedback about assignments, deadlines, class procedures or concerns. This forum helped build a learning community where the students actively engaged to ask procedural class questions, and share their values and belief.

Both of the instructors devoted more time to engage students in collaborative learning activities such as discussion activities. Increasing the instructors' presence in discussion activities encouraged and fostered a healthy exchange of ideas, and exponentially enhance interaction between instructor-student, student-student and student-content. Specifically, the students in Case Two benefitted from the collaborative Google Activity writing activity. This activity was an exceptional learning opportunity for the students to enhance the quality of student engagement, increase students' collaboration, customize their learning, and complement the face-to-face activities through the use of effective online communication strategy.

Instructor 1 continued to assess the students' comprehension of class topics through open-ended question quizzes. These online quizzes prepared the students for further lectures and discussions in face-to-face classes. Instructor 2 began assessing students' comprehension of details and specific knowledge from multiple chapters through multiple choice quizzes. Both of the online quizzes were appropriate to comprehensively evaluate student knowledge. Their benefits were not splendid to facilitate learning and create an effective blended learning environment. However, they were useful for both of the instructors to understand whether students learned what they were being expected to learn, and how successfully the instructional materials were being presented.

Phase Three

Phase Three took place between the 9th week and at the end of the 14th week, a total of a five-week time frame in the Fall 2016 semester. Phase Three consisted of: 1) The second student instructional materials evaluation survey, 2) An instructor interview, 3) The redesign of the course 4) Observation of the learning environment, and 5) The student latter course interest survey.

Phase Three of Case One

Instructional Materials Evaluation Survey. The second student Instructional Materials Evaluation Survey was administered in the tenth week of the semester in order to estimate students' motivational attitude toward the use of instructional activities and tools. The results of the survey helped me determine a need of altering the use of instructional activities and tools in the learning environment. Eleven students consisting of one male and ten female participants agreed to complete the survey. Coding of the quantitative data, to analyze the survey data collected from the students, was the following format. Each question from 1 – 36 was documented with the following codes: 1 = Not True, 2 = Slightly True, 3 = Moderately True, 4 = Mostly True, 5 = Very True, except the reverse questions. Each reverse question was documented by reversing the response of 5 becoming 1, 4 becoming 2, 3 staying the same at 3, 2, becoming 4 and 1 becoming 5. Keller (2010) states that the minimum score on the Course Interest Survey is 36 and the highest score is 180 with a midpoint of 108, and there is not normal distribution of responses. The students (n=11) had a mean score of 115. The score suggests that the students' reactions to the use of instructional materials were positive in the learning environment at the tenth week of the semester.

Interview. The purpose of the instructor experience evaluation interview was to reveal Instructor 1's opinions whether Instructor 1 taught an effective and efficient blended learning course and was able use technological resources, and uncover Instructor 1's perception about the first experience of teaching a blended learning course. The constant analysis method was used to analyze data collected from the interview. I requested two doctoral students in the Learning Design and Technology program to analyze the data by using open coding.

Two doctoral students in the Learning Design and Technology program and I examined the data as analysts in order to ensure coding reliability and discover all explicit and implicit

themes from the raw data. Five themes emerged from the instructor experience evaluation interview analyses as follows: motivation to change, benefit, ambiguity/concern, limitation and resistance. The first theme, motivation to change, refers to Instruction 1's desire to transform the classical learning environment into the blended learning environment. The second theme, benefit, refers to if Instructor 1 gained any advantages from teaching the blended learning course according to Instructor 1's perception. The third theme, ambiguity/concern, refers to any challenges Instructor 1 faced while teaching the blended learning course. The fourth theme, limitation, refers to Instructor 1's limitations which constrained Instructor 1 from teaching the blended learning course in the best way. The fifth theme, resistance, refers to reasons why Instructor 1 was reluctant to teach the blended learning course. Table 18 is a representation of the themes that emerged, including a few quotes from Instructor 1 to provide evidence of each theme.

Table 18 *Summary of Instructor Experience Evaluation Interview Result for Phase Three of Case One*

Emerging Themes	**Sample interview comments**
Motivation to change	"You and I create it (blended learning) together it works pretty well. I think they (students) learned more than they had learned in the prior semesters because these assignments that we made online/blended forced them to go a little deeper into material that in the past." "I don't concentrate very well reading excessive amounts of dialogue right. But if I would have, I would have tailored it and made it smaller I would have been able to. So I go back to my fault with that." "I will use them (online learning materials) again. I thought they were very helpful. But I have to refine because I had too much." "I will probably I put more classes online in the future"

Benefits	"What it (blended learning) did for me personally is help alleviate having too much that I had to cover in class. They (online activities) allowed me to assess (students) without taking up class time." "If I just discussed it in class as I have the last 15 years they wouldn't really have read it in that depth because they (all students) cannot say something in class that I don't have enough time and I can't get everybody to talk through that." "The online stuff that makes them more accountable." "That was excellent. A group product (Google Doc) where everybody put their information into a big table two different tables and then we were all able to go through it and do a comparison and contrast across everybody's insertions into the table." "The discussion boards and the group products Google Docs definitely made them (students) work more collaboratively and invest time for learning."
Ambiguity/ Concern	"I think they (student) might complain that it was too much extra work for them too." "The problem is that it's very hard to come up for all material to come up with a rich conversational assignment. It's hard to come up with an assignment that forces them to have a deep conversation in a meaningful way that doesn't make them feel like they're just doing an obligatory response" "I wasn't really able to come up with good questions like I had too much and I wasn't really clear about what they were supposed to discuss really" "Things that I picked to be on the discussion boards are part of it was my fault. I didn't narrow down the topics probably enough I probably had too much in there"
Limitations	"I honestly didn't have time to read. So that would be another weakness so I really didn't read what they (students) wrote very much. I skimmed it and I did some responding to them."

Resistance	"I don't think I would like it if I felt like I had to read all of their discussions. I don't enjoy that"

Redesign of the Course. The purpose of redesigning the course was to make the implemented blended learning course more effective and efficient. The process of redesigning the learning environment included exploiting the course Blackboard site and adding a new instructional activity.

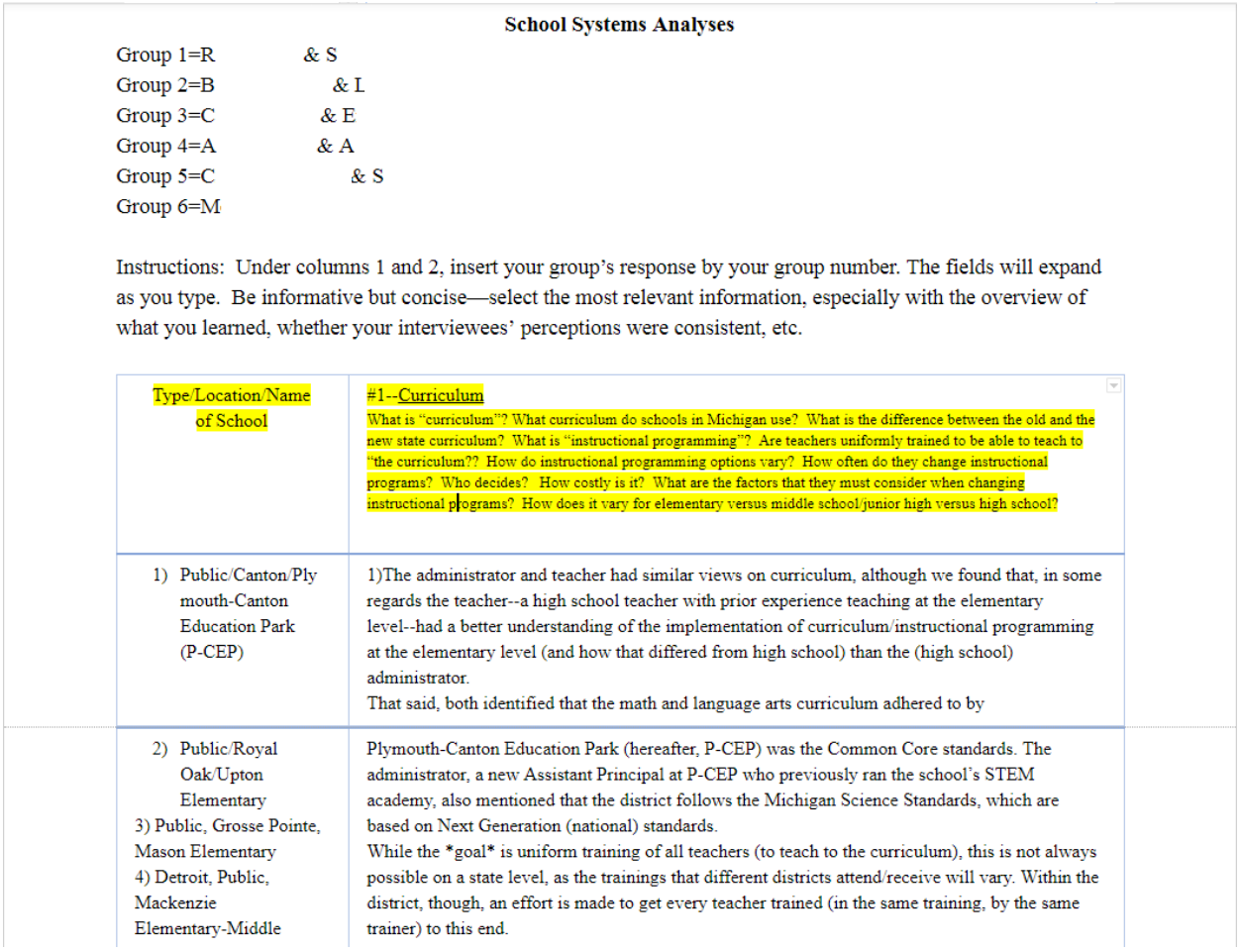
The Course Blackboard Site. The purpose of utilizing the Blackboard site was to provide the instructional materials and a variety of supplemental tools to enhance face-to-face teaching and facilitate learning. Instructor 1 kept exploiting the features of the course Blackboard site including a syllabus, discussions, course content, announcements, grade book, assignments, assessments and a calendar, and maintained the same layout of the course Blackboard site which was straightforward and well-organized.

Instructional Activities. The purpose of utilizing the instructional activities was to improve the benefits of both face-to-face and online learning. The online discussions and online quizzes were two instructional activities that were created to enhance interactions between student-instructor and student-student, and promote self-paced learning at the first phase of the study. Instructor 1 kept using them with making changes to improve their effectiveness in the previous phase. This phase of the study, Google Documents were employed to facilitate students' learning efforts.

Instructor 1 assigned the students two new learning activities which were curriculum & instruction analysis and school system analysis. They were real-life learning experience through case studies. Instructor 1 established clear requirements for each case which required students make in-depth investigations. For these case studies, the students were divided into groups of two

students and each group had to carry out each case by interviewing with a teacher and an administrator, analyzing official documents and so on. However, all groups could come together in created Google Documents to write their summary of findings on topics being addressed of each case. The Google Documents kept the students motivated to stick to the necessary criteria, timeline and project plan of the cases. They also had an opportunity to review entire findings of all groups and were able to see the findings together in face-to-face class to discuss, analyze, compare and contrast similarities, differences, and inconsistencies of their findings. Besides, the Google Documents enabled Instructor 1 to (1) monitor the students whether they were on the right track, made progress on their cases or were advancing toward the success in their cases, (2) provide additional support for students who encountered an obstacle and could not deal with by their selves, and (3) guide the students construct their own knowledge for solving problems. For instance, the due date of some assignments was the same date of a case study. The students were struggling to complete their assignments with complaints. Instructor 1 realized their struggling and postponed due date for one of the major assignments by stating that "It sounds like you have a lot going on this week. If you need another day to get the post done, that's fine. Can you just get it done by Friday night?"

Figure 13 shows a screenshot of a part of a Google Document view from one of the created Google Documents for a case study as evidence.



School Systems Analyses

Group 1=R & S
Group 2=B & L
Group 3=C & E
Group 4=A & A
Group 5=C & S
Group 6=M

Instructions: Under columns 1 and 2, insert your group's response by your group number. The fields will expand as you type. Be informative but concise—select the most relevant information, especially with the overview of what you learned, whether your interviewees' perceptions were consistent, etc.

Type/Location/Name of School	#1--Curriculum What is "curriculum"? What curriculum do schools in Michigan use? What is the difference between the old and the new state curriculum? What is "instructional programming"? Are teachers uniformly trained to be able to teach to "the curriculum?? How do instructional programming options vary? How often do they change instructional programs? Who decides? How costly is it? What are the factors that they must consider when changing instructional programs? How does it vary for elementary versus middle school/junior high versus high school?
1) Public/Canton/Plymouth-Canton Education Park (P-CEP)	1)The administrator and teacher had similar views on curriculum, although we found that, in some regards the teacher--a high school teacher with prior experience teaching at the elementary level--had a better understanding of the implementation of curriculum/instructional programming at the elementary level (and how that differed from high school) than the (high school) administrator. That said, both identified that the math and language arts curriculum adhered to by
2) Public/Royal Oak/Upton Elementary 3) Public, Grosse Pointe, Mason Elementary 4) Detroit, Public, Mackenzie Elementary-Middle	Plymouth-Canton Education Park (hereafter, P-CEP) was the Common Core standards. The administrator, a new Assistant Principal at P-CEP who previously ran the school's STEM academy, also mentioned that the district follows the Michigan Science Standards, which are based on Next Generation (national) standards. While the *goal* is uniform training of all teachers (to teach to the curriculum), this is not always possible on a state level, as the trainings that different districts attend/receive will vary. Within the district, though, an effort is made to get every teacher trained (in the same training, by the same trainer) to this end.

Figure 13 Sample Screenshot of a Part of a Google Document

Observation of the Learning Environment. I observed the learning environment by using an observation tool (Appendix G) as guidance. This observation tool provided me a useful framework to evaluate the effectiveness and efficiency of the redesigned blended learning environment. The results of observation were used to help determine appropriate practices for instructors inexperienced in teaching a blended learning course to successfully design and implement a blended learning course. Table 19 shows the results of the observation based on this framework for Phase Three of Case One in the study.

Table 19 *Results of Observation of Learning Environment for Phase Three of Case One*

Principle 1: Good practice encourages contact between students and faculty.

Evidence Found:

- Instructor 1 encouraged and fostered a healthy exchange of ideas and sharing of experiences among students.
- Instructor 1 initiated contact with, or responded to, students on a regular basis in order to establish a consistent online presence in the course (and prior notice was given to students in the event that the instructor would be unavailable for more than a few days, such as might be the case during professional travel).
- Instructor 1 used a prominent announcement area to communicate important up-to-date course information to students, such as reminders of impending assignment due dates, curriculum changes, scheduled absences, etc.
- Instructor 1 held regular office hours, and by appointment, that can be F2F in the instructor office or mediated by technology (e.g., the telephone, chat areas, Adobe Connect Pro).
- Instructor 1 provided students with interaction space for study groups, "hall way conversations," etc. *

Strengths:

- Instructor 1 clearly stated requirements for course interactions.
- Instructor 1 showed her respect toward the students such as her style and language were appropriate and encouraging when replying to students' messages or commenting on their work.
- Instructor 1 replied to student's emails immediately.
- Instructor 1 clearly stated netiquette expectations with regard to online communication.
- Instructor 1 asked questions that challenge students to think more deeply
- Instructor 1 improved her navigational skills for herself and the students to be able to give easily understandable navigational instructions. *

Principle 2: Good practice develops reciprocity and cooperation among students.

Evidence Found:

- Instructor 1 provided regular opportunities for students to engage in the following activities:
    - Formal and/or informal discussions of course topics
    - Collaborative course assignments
    - Study groups
- Instructor 1 provided discussion prompts that help to guide and elicit student participation for discussion activities.
- Instructor 1 facilitated class discussions by encouraging, probing, questioning, summarizing, etc. *
- Instructor 1 provided student interaction space for study groups, "hall way conversations," etc. *

- Instructor 1 indicated clear explanation of the criteria for "good" discussion participation.
- Instructor 1 created a friendly atmosphere that reduced students' hesitancy and helped them make personal connections.

Strengths:

- Instructor 1 made class atmosphere conductive to student learning. Instructor 1 promptly responded to students' emails and other inquiries and promoted peer-to peer collaboration.
- Instructor 1 prevented specific students from dominating discussion.
- Instructor 1 attended respectfully to student comprehension and puzzlement.
- Instructor 1 corrected to wrong answers constructively.
- Instructor 1 used active learning strategies such as small group and whole group works with providing clear directions for active learning tasks. *
- Instructor 1 provided student interaction spaces for study groups in the course blackboard site and F2F classes.

Areas for Improvement:

- Instructor 1 should be a modeling of good discussion participation practice.
- Instructor 1 should be more present, proactive, and engaged in the course blackboard site, specifically in discussion board.

Principle 3: Good practice encourages active learning.

Evidence Found:

- Instructor 1 provided the following student activities:
    - Active use of writing, speaking, and other forms of self-expression
    - Opportunity for information gathering, synthesis, and analysis in solving problems (including the use of library, electronic/computer and other resources, and quantitative reasoning and interpretation) *
    - Engagement in collaborative learning activities
    - Dialogue pertaining to social behavior, community, and scholarly conduct*

- Instructor 1 provided opportunities for students to "customize" their learning by tailoring assignments to their personal and professional interests and needs. *
- Instructor 1 assigned students to
    - Think, talk, or write about their learning
    - Reflect, relate, organize, apply, synthesize, and evaluate information*
    - Perform research*

Strengths:

- Instructor 1 made explicit statements drawing student attention to key ideas. Discussions and assignments were designed to focus on key ideas in general. Each constituted discussion group was directed to work collaboratively to respond discussion board questions and each student was required to do assignments on her/his own.
- Instructor 1 encouraged students to respond to their peers throughout the discussions.
- Instructor 1 conveyed the purpose of each assignment.
- Instructor 1 provided opportunities for students to practice what they have learned. *
- Instructor 1 provided instructional aid and positive reinforcement to encourage student participation. *

Principle 4: Good practice gives prompt feedback.

Evidence Found:

- Instructor 1 provided information about course feedback methods and standards on the course syllabus.
- The instructor-1 gave option for students to submit drafts of assignments for instructor feedback. *
- Instructor 1 provided meaningful feedback on student assignments within a reasonable time frame.
- Instructor 1 provided assignment feedback that was clear, positive, specific, and focused on observable behavior.
- Instructor 1 explicitly stated assignment grading criteria in the course syllabus.
- Instructor 1 provided up-to-date, student-accessible course gradebook.
- Instructor 1 elicited student feedback for course improvement. *
- Instructor 1 provided examples of student work that demonstrated advancement toward learning goals. *

Strengths:

- Instructor 1 made class atmosphere conductive to student learning. Instructor 1 promptly responded to students' emails and promoted peer-to peer collaboration
- Instructor 1 used positive reinforcement to encourage student intellectual risk-taking and corrected to wrong answers constructively

Areas for Improvement:

- Instructor 1 should provide an open discussion forum where students can ask questions, and receive instructor feedback, about course content and activities.
- Instructor 1 should be more present, proactive and engaged in the course blackboard site.

Principle 5: Good education emphasizes time on task.

Evidence Found:

- Instructor 1 provided a published course schedule that outlined topics to be covered and assignment due dates so students can plan their workload accordingly.
- Instructor 1 indicated information on the course syllabus that provided an estimate of the amount of time students should spend on the course
- Instructor 1 provided course-specific study tips with strategies for utilizing their time well.
- Instructor 1 provided assignment feedback with information on where students focus on their studies when they digress the main topic.
- Instructor 1 provided assignment due dates and timeframes by taking into account the nature of the target audience. For example, a course targeted to working adult professionals would incorporate a weekend into an assignment timeframe.

Strengths:

- Instructor 1 prepared a detailed syllabus. It was very strict and clear to state policies, requirements, and procedures for the course. It also indicated the requirements and expectations with due dates of exams, assignments, and papers.
- Instructor 1 was organized.
    - Organization of content was clear.
    - Course Blackboard site was designed and organized very well.
    - It was free of errors and dead links.
    - Navigation of the course site was easy.
    - Instructional materials were easily accessible and usable.
- Instructor 1 provided explanation of assignments and their rubrics were clear and detailed. Introduction to assignments was included. Student learning outcomes were included.

Principle 6: Good practice communicates high expectations.

Evidence Found:

- Instructor 1 explicitly indicated the skills and knowledge that every student needed to have in order to be successful in the course.
- The instructor-1 provided clear explanation of course learning goals and how assignments were designed to help students achieve those goals.
- Instructor 1 provided detailed feedback on student assignments through written explanations. *
- Instructor 1 motivated and encouraged students to answer of questions that require more complex solutions. *
- Instructor 1 asked critical and probing questions when communicating with students about course assignments and activities.
- Instructor 1 provided examples and non-examples of high quality work, along with a discussion of the differences between these.

- Instructor 1 showed examples of student work that demonstrated advancement toward learning goals.
- Instructor 1's assessment strategy provided more informative and constructive feedback to students

Strengths:

- Instructor 1 appropriately provided instructional aid to facilitate important points
- Instructor 1 constituted a grading policy which was easy to understand and demonstrates progress in course.
- Instructor 1 clearly stated learning outcomes of the course.
- Instructor 1 showed her enthusiasm with explanation of new concepts and elaboration of complex information

Areas for Improvement:

- Instructor 1 should provide more frequent feedback on student assignments through written explanations.

Principle 7: Good practice respects diverse talents and ways of learning.

Evidence Found:

- Instructor 1 used a variety of assessment tools that gauged student progress.
- Instructor 1 provided alternative assignment options that allowed students to demonstrate their progress in a manner that was best conducive to their talents. *
- Instructor 1 provided supplemental online materials to students who lacked prerequisite knowledge or who would benefit from having content presented in an alternative manner.
- Instructor 1 created a positive online climate where students were encouraged to seek assistance with course content and learning activities if needed.
- Instructor 1 provided a policy for accommodations that was stated in the course syllabus.

Strengths:

- Presentation of content was appropriate. The links Instructor 1 provided work and connected to appropriate areas.
- Instructor 1's method of presentation was appropriate. Lecture, discussion, quiz and Google activities were suitable for the students
- Instructor 1 provided current tools and technologies that enhanced learning
- Instructor 1 made distinctions between fact and opinion and presented divergent viewpoints.
- Instructor 1 provided different learning activities that required students to work collaboratively and do by their selves.

Areas for Improvement:

- Instructor 1 should give timely, corrective feedback for online activities.

* What have been changed in comparison to the learning environment in Phase Two.

Latter Course Interest Survey. The Latter Course Interest Survey was administered at the end of the semester in order to measure the motivation levels of the students. Eleven students consisting of one male and ten female participants agreed to complete the survey. Coding of the quantitative data to analyze the survey data collected from the students was the following format. Each question from 1 – 34 was documented with the following codes: 1 = Not True, 2 = Slightly True, 3 = Moderately True, 4 = Mostly True, 5 = Very True, except the reverse questions. Each reverse question was documented by reversing the response of 5 becoming 1, 4 becoming 2, 3 staying the same at 3, 2, becoming 4 and 1 becoming 5. Keller (2010) states that the minimum score on the Course Interest Survey is 34 and the highest score is 170 with a midpoint of 102, and there is not normal distribution of responses. The students (n=11) had a mean score of 135. For "Satisfaction", one of the four categories of Keller's model, the minimum score is 9 and the highest score is 45, and there is no normal distribution of responses for the subcategories. The students (n=11) had a mean score of 34.3. The scores suggest that the students were still motivated and satisfied after learning in the blended learning course.

Phase Three of Case Two

Instructional Materials Evaluation Survey. The second student Instructional Materials Evaluation Survey was administered in the tenth week of the semester in order to estimate students' motivational attitude toward the use of instructional activities and tools. The results of the survey helped me determine a need of altering the use of instructional activities and tools in the learning environment. Twenty-three students consisting of two male and twenty-one female participants

agreed to complete the survey. Coding of the quantitative data, to analyze the survey data collected from the students, was the following format. Each question from 1 – 36 was documented with the following codes: 1 = Not True, 2 = Slightly True, 3 = Moderately True, 4 = Mostly True, 5 = Very True, except the reverse questions. Each reverse question was documented by reversing the response of 5 becoming 1, 4 becoming 2, 3 staying the same at 3, 2, becoming 4 and 1 becoming 5. Keller (2010) states that the minimum score on the Course Interest Survey is 36 and the highest score is 180 with a midpoint of 108, and there is not normal distribution of responses. The students (n=23) had a mean score of 141.9. The score suggests that the students' reactions to the use of instructional materials were positive in the learning environment at the tenth week of the semester.

Interview. The purpose of the instructor experience evaluation interview was to reveal Instructor 2's opinions whether Instructor 2 taught an effective and efficient blended learning course and was able use technological resources, and uncover Instructor 2's perception about the first experience of teaching a blended learning course. The constant analysis method was used to analyze data collected from the interview. I requested two doctoral students in the Learning Design and Technology program to analyze the data by using open coding.

Two doctoral students in the Learning Design and Technology program and I examined the data as analysts in order to ensure coding reliability and discover all explicit and implicit themes from the raw data. Five themes emerged from the instructor experience evaluation interview analyses as follows: motivation to change, benefit, ambiguity/concern, limitation and resistance. The first theme, motivation to change, refers to Instruction 2's desire to transform the classical learning environment into the blended learning environment. The second theme, benefit, refers to if Instructor 2 gained any advantages from teaching the blended learning course according to Instructor 2's perception. The third theme, ambiguity/concern, refers to any challenges

Instructor 2 faced while teaching the blended learning course. The fourth theme, limitation, refers to Instructor 2's limitations which constrained Instructor 2 from teaching the blended learning course in the best way. The fifth theme, resistance, refers to reasons why Instructor 2 was reluctant to teach the blended learning course. Table 20 is a representation of the themes that emerged, including a few quotes from Instructor 2 to provide evidence of each theme.

Table 20 *Summary of Instructor Experience Evaluation Interview Result for Phase Three of Case Two*

Emerging Themes	**Sample interview comments**
Motivation to change	"I was hesitant at first but I think it (teaching blended learning course) went well. I was pleased." "I think it (blended learning) taught me because I copied the course again for next semester and then using the same lay out." "I think having you work with me taught me to stay more consistent. I think it is the importance of consistency because I like to do something new every semester." "I think we have to have online materials to engage students"
Benefit	"The takeaway that we implemented with the Google Docs was a strength that I didn't really see ahead. I think that produced the greatest benefit for the class." "I was pleased. Actually, I was coming in class and they were really excited about having materials ahead of time which I was never successful to do it." "It was more structured and it was actually productive." "when sat at night and I went to the google docs, I saw deeper learning happening there. That's where I saw people like express themselves like they didn't say anything in the class but they express themselves there. It really hits me."

	"I think they had actually more interactions than any other semesters I've had with the students using both online and in-class materials."
Ambiguity/ Concern	"I think my weakness is maintaining consistency on the online discussion boards that I was very weak."
Limitation	"My own time challenges were not being able to spend a lot of time online for the online discussions."
Resistance	"I think for that particular course because it's so clinical in nature students like to gather in groups and discuss things in person." I was a poor instructor because I also didn't want to leave class and go online so that was me. That was my fault." "It worked better than my expectations. I think I was skeptical like it won't work for the psychological class."

Redesign of the Course. The purpose of redesigning the course was to make the implemented blended learning course more effective and efficient. The process of redesigning the learning environment included exploiting the course Blackboard site and the instructional activities.

The Course Blackboard Site. The purpose of utilizing the Blackboard site was to provide the instructional materials and a variety of supplemental tools to enhance face-to-face teaching and facilitate learning. Instructor 2 kept exploiting the features of the course Blackboard site including a syllabus, discussions, course content, announcements, grade book, assignments, assessments and a calendar, and maintained the same layout of the course Blackboard site which was straightforward and well-organized. Also, the course Blackboard site provided student flexibility and convenience as Graham (2006) states one of key factors that blended learning promises.

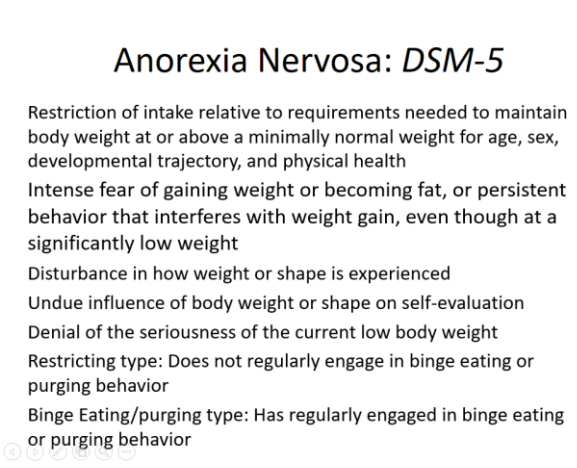
One of the examples of providing flexibility and convenience through the course Blackboard site was that Instructor 2 had an opportunity to switch an in-class week with an online week because of any contingencies such as instructor's sickness, unplanned travel, or extreme weather conditions etc. The noticeable instance was that The United States presidential election of 2016 held on Tuesday, November 8, 2016, which was the same date of the tenth week face-to-face class. Instructor 2 considered student convenience and decided to switch tenth week in class session with eleventh week online class. This switch avoided an undesirable situation which some students could miss the class because of for the presidential election.

Instructional Activities. The purpose of utilizing the instructional activities was to improve the benefits of both face-to-face and online learning. The online discussions, a collaborative Google Document writing and multiple choices quizzes that were created in the previous Phases to improve interaction between instructor-student, student-student and student-content, engage the students in online knowledge construction, promote self-paced learning, and assess students' comprehension of details and specific knowledge. Instructor 2 kept utilizing them without making any major changes. However, Instructor 2 and I jointly redesigned Instructor 2's PowerPoint presentations to make them effective and engaging.

I assisted Instructor 2 with redesigning the presentations used in from 9th week class to the rest of the semester. After we finished redesigning the presentations, Instructor 2 kindly requested me to help redesigning the presentations for the previous weeks to use them for the following years because Instructor 2 was very pleased with the effective and engaging design of the presentations. In order to assist Instructor 2 with the process of redesigning the presentations, I drew upon Mayer's Multimedia Learning principles (2001). For instance, I considered four principles of the multimedia learning principles including coherence principle, multimedia principle, spatial

contiguity principle and signaling principle in order to revise a slide in one of the presentations. Figure 14 demonstrated how these principles were applied in one of the slides by comparing the initial design of the slide and the latter design of the slide.

Before



After

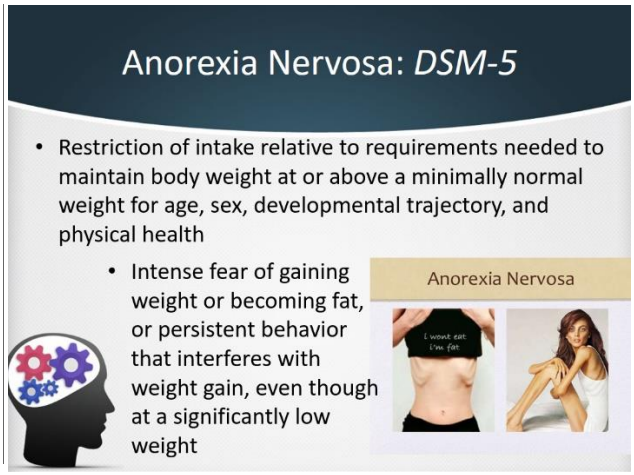


Figure 14 Sample Slides of Differences

Observation of the Learning Environment. I observed the learning environment by using an observation tool (Appendix G) as guidance. This observation tool provided me a useful framework to evaluate the effectiveness and efficiency of the redesigned blended learning environment. The results of observation were used to help determine appropriate practices for instructors inexperienced in teaching a blended learning course to successfully design and implement a blended learning course. Table 21 shows the results of the observation based on this framework for Phase Three of Case Two in the study.

Table 21 *Results of Observation of Learning Environment for Phase Three of Case Two*

Principle 1: Good practice encourages contact between students and faculty.
Evidence Found: • Instructor 2 encouraged and fostered a healthy exchange of ideas and sharing of experiences among course participants.

- Instructor 2 initiated contact with, or responded to, students on a regular basis in order to establish a consistent online presence in the course (and prior notice was given to students in the event that Instructor 2 would be unavailable for more than a few days, such as might be the case during professional travel).
- Instructor 2 held regular office hours, and by appointment, that can be F2F in the instructor office or mediated by technology (e.g., the telephone, chat areas, Adobe Connect Pro)
- Instructor 2 clearly stated requirements for course interactions.
- Instructor 2 was proactive in the course blackboard site.
- Instructor 2 showed her respect toward the students such as her style and language were appropriate and encouraging when replying to students' messages or commenting on their work.

Strengths:

- Instructor 2 provided a prominent announcement area to communicate important up-to-date course information to students, such as reminders of impending assignment due dates, curriculum changes, scheduled absences, etc.
- Instructor 2 provided students with interaction space for study groups, "hall way conversations," etc.
- Instructor 2 replied to student's emails immediately.
- Instructor 2 clearly stated netiquette expectations with regard to online communication.
- The instructor-2 asked challenging questions that prompt students to think more deeply.
- Instructor 2 improved her navigational skills for herself and the students to be able to give easily understandable navigational instructions.

Areas for Improvement:

- Although Instructor 2 responded student inquiries in the course blackboard site, the instructor's responses should be no later than 24 hours.
- Instructor 2 should be more present and engaged in the course blackboard site.

Principle 2: Good practice develops reciprocity and cooperation among students.

Evidence Found:

- Instructor 2 provided regular opportunities for students to engage in the following activities:
    - Formal and/or informal discussions of course topics
    - Collaborative course assignments
    - Study groups
- Instructor 2 provided discussion prompts that helped to guide and elicit student participation in class discussion activities.
- Instructor 2 created a friendly atmosphere that reduced students' hesitancy and helped them make personal connections.

- Instructor 2 indicated a clear explanation of the criteria for "good" discussion participation in the syllabus.
- Instructor 2 facilitated discussions by encouraging, probing, questioning and summarizing.
- Instructor 2 made the class atmosphere conductive to student learning. Instructor 2 responded to students' emails and other inquires, and promoted peer-to-peer collaboration
- Instructor 2 should prevent specific students from dominating a discussion.
- Instructor 2 corrected to wrong answers constructively.
- Instructor 2 was proactive in the course blackboard site.
- Instructor 2 used active learning strategies such as small group and whole group works with providing clear directions for active learning tasks. *

Strengths:

- Instructor 2 provided student interaction space for study groups, "hall way conversations," etc.
- Instructor 2 provided student interaction spaces for study groups in the course blackboard site and F2F classes.
- Instructor 2 used positive reinforcement to encourage student participation.

Areas for Improvement:

- Instructor 2 should demonstrate modeling of good discussion participation practices in the course blackboard site.
- Although Instructor 2 strived to be present and engaged in the course blackboard site, Instructor 2 should be more present and engaged.

Principle 3: Good practice encourages active learning.

Evidence Found:

- Instructor 2 involved students in the following activities
  - Active use of writing, speaking, and other forms of self-expression
  - Engagement in collaborative learning activities
  - Dialogue pertaining to social behavior and scholarly conduct
- Instructor 2 assigned students to
  - Think, talk, and write about their learning *
  - Reflect, relate, organize, apply and evaluate information. *
  - Perform research *
- Instructor 2 made explicit statements drawing student attention to key ideas. Discussions and assignments were designed to focus on key ideas in general. Each constituted discussion group was directed to work collaboratively to respond discussion board questions and each student was required to do assignments on her own.
- Instructor 2 conveyed the purpose of each assignment.

- Instructor 2 provided opportunities for students to practice what they have learned. *

Strengths:

- Instructor 2 encouraged students to respond to their peers throughout the discussions.
- Instructor 2 provided the following activit(ies):
    - Opportunity for information gathering, synthesis, and analysis in solving problems (including the use of library, electronic/computer and other resources, and quantitative reasoning and interpretation, as applicable)
- Instructor 2 provided opportunities for students to "customize" their learning by tailoring assignments to their personal and professional interests and needs.
- Instructor 2 monitored and guided students who couldn't keep up with their classmates. *

Areas for Improvement:

- Instructor 2 should be more present in online learning environment to encourage students being active and engaged.

Principle 4: Good practice gives prompt feedback.

Evidence Found:

- Instructor 2 provided information about course feedback methods and standards on the course syllabus.
- Instructor 2 provided assignment feedback that was clear, positive, specific, and focused on observable behavior.
- Instructor 2 explicitly stated individual assignment grading criteria in the course syllabus.
- Instructor 2 provided an up-to-date, student-accessible course gradebook.
- Instructor 2 provided meaningful feedback on student assignments in reasonable time frame in the course blackboard site.
- Instructor 2 presented examples of student work that demonstrated advancement toward learning goals. *

Strengths:

- Instructor 2 provided an open discussion forum where students could ask questions, and receive instructor feedback, about course content and activities.
- Instructor 2 made class atmosphere conductive to student learning. Instructor 2 promptly responded to students emails and other inquires, promoted peer-to-peer collaboration.
- Instructor 2 provided opportunity for students to submit drafts of assignments for instructor feedback.
- Instructor 2 elicited student feedback for course improvement. *
- Instructor 2 used positive reinforcement to encourage student participation and intellectual risk-taking.

Principle 5: Good education emphasizes time on task.

Evidence Found:

- Instructor 2 provided a published course schedule that outlined topics to be covered

and assignment due dates so students would plan their workload accordingly.
- Instructor 2 indicated course-specific study tips that provided students with strategies for utilizing their time well.
- Instructor 2 provided assignment due dates and timeframes by taking into account the nature of the target audience. For example, a course targeted to working adult professionals would incorporate a weekend into an assignment timeframe.
- Instructor 2 indicated information in the course syllabus that provided an estimate of the amount of time students should spend on the course
- Instructor 2 gave assignment feedback that provided students with information on where to focus their studies when students digress the main topic.

Strengths:
- Instructor 2 prepared a detailed syllabus. It was very strict and clear to state policies, requirements, and procedures for the course. It also indicated the requirements and expectations with due dates of exams, assignments, and papers.
- Instructor 2 was organized.
    - Organization of content was clear.
    - Course Blackboard site was designed and organized very well.
    - It was free of errors and dead links.
    - Navigation of the course site was easy.
    - Instructional materials were easily accessible and usable.
- Instructor 2 provided clear and detailed explanation of assignments and their rubrics. Introduction to assignments were included. Student learning outcomes were included.

Principle 6: Good practice communicates high expectations.

Evidence Found:
- Instructor 2 explicitly communicated every student what skills and knowledge they needed to have in order to be successful in the course.
- Instructor 2 provided clear explanation of course learning goals and how assignments were designed to help students achieve those goals.
- Instructor 2 motivated and encouraged students to answer the questions that require more complex solutions.
- Instructor 2 asked critical and probing questions when communicating with students about course assignments and activities.
- Instructor 2 appropriately provided instructional aid to facilitate important points.
- Instructor 2 constituted a grading policy which was easy to understand and demonstrated progress in course.
- Instructor 2 clearly stated learning outcomes of the course.
- Instructor 2's assessment strategy provided more informative and constructive feedback to students.

Strengths:

- Instructor 2 showed her enthusiasm with explanation of new concepts and elaboration of complex information
- Instructor 2 provided detailed feedback on students' assignments through written explanations. *
- Instructor 2 provided examples of student work that demonstrated advancement toward learning goals. *
- Instructor 2 showed examples and non-examples of high quality work, along with a discussion of the differences between these. *

Areas for Improvement:

- Instructor 2 should provide more frequent feedback on students' assignments through written explanations.

Principle 7: Good practice respects diverse talents and ways of learning.

Evidence Found:

- Instructor 2 utilized a variety of assessment tools that gauged student progress.
- Instructor 2 stated a clear policy for accommodations in the course syllabus.
- Instructor 2 provided alternative assignment options that allowed students to demonstrate their progress in a manner that was best conductive to their talents.
- Instructor 2 created a positive online climate where students were encouraged to seek assistance with course content and learning activities if needed.
- Instructor 2 provided current tools and technologies that enhanced learning.

Strengths:

- Instructor 2 provided supplemental online materials the students who lacked prerequisite knowledge or who would benefit from having content presented in an alternative manner.
- Presentation of content was appropriate. The links Instructor 2 provided worked and connected to appropriate areas.
- Instructor 2's method of presentation was appropriate. Lecture, discussion and Google activities were suitable for the students
- Instructor 2 created a positive online climate where students were encouraged to seek assistance with course content and learning activities if needed.

Areas for Improvement:

- Although Instructor 2 provided corrective feedback for online learning activities, Instructor 2 should provide feedback in reasonable time frame for online activities.

* What have been changed in comparison to the learning environment in Phase Two.

Latter Course Interest Survey. The Latter Course Interest Survey was administered at the end of the semester in order to measure the motivation levels of the students. Twenty-three

students consisting of two male and twenty-one female participants agreed to complete the survey. Coding of the quantitative data to analyze the survey data collected from the students was the following format. Each question from 1 – 34 was documented with the following codes: 1 = Not True, 2 = Slightly True, 3 = Moderately True, 4 = Mostly True, 5 = Very True, except the reverse questions. Each reverse question was documented by reversing the response of 5 becoming 1, 4 becoming 2, 3 staying the same at 3, 2, becoming 4 and 1 becoming 5. Keller (2010) states that the minimum score on the Course Interest Survey is 34 and the highest score is 170 with a midpoint of 102, and there is not normal distribution of responses. The students (n=23) had a mean score of 145.2. For "Satisfaction", one of the four categories of Keller's model, the minimum score is 9 and the highest score is 45, and there is no normal distribution of responses for the subcategories. The students (n=11) had a mean score of 37.7. The scores suggest that the students were still motivated and satisfied after learning in the blended learning course.

Summary of Phase Three of Both Cases

Through using the observation tool, the findings of the observation were previously given for Phase Three of both cases in detail. According to the observation findings, the instructors displayed some key competencies in teaching a blended learning course while they also lacked some key competencies to make a blended learning course an effective and efficient learning environment. Based on a collection of qualitative observation data, Table 22 shows the summary of the strengths and weaknesses of the instructors.

Table 22 *Summary of Strengths and Weaknesses of the Instructors in Phase Three of Each Case*

Phase One of Both of Cases		
Feedback for the Instructor	**Instructor 1**	**Instructor 2**

Strengths	-Engaging students in collaborative learning activities and active use of writing and speaking activities -Providing a well-organized course Blackboard site including organized content, free of errors and dead links, easy navigation, and easily accessible and usable learning materials -Providing assignment feedback that was clear, positive, specific, and focused on observable behavior -Responding to students' emails and promoting peer-to peer collaboration -Utilizing a variety of assessment tools -Providing supplemental online materials -Making explicit statements drawing student attention to key ideas -Assigning students to think, talk, and write about their learning -Encouraging and fostering a healthy exchange of ideas and sharing of experiences among course participants in online learning environment -Preventing specific students from dominating a discussion -Striving to improve the navigational skills for itself and the students to be able to give easily understandable navigational instructions -Asking challenging questions that prompt students to think more deeply -Providing a prominent announcement area to communicate important up-to-date course information to students -Conveying the purpose of each assignment -Providing assignment feedback with information on where students focus on their studies when they digress the main topic	-Providing student interaction spaces for study groups -Engaging students in collaborative learning activities, and active use of writing and speaking activities -Providing a well-organized course Blackboard site including organized content, free of errors and dead links, easy navigation, and easily accessible and usable learning materials -Providing assignment feedback that was clear, positive, specific, and focused on observable behavior -Responding to students' emails and promoting peer-to peer collaboration -Utilizing a variety of assessment tools -Providing supplemental online materials -Making explicit statements drawing student attention to key ideas -Assigning students to think, talk, and write about their learning -Encouraging and fostering a healthy exchange of ideas and sharing of experiences among course participants in online learning environment -Preventing specific students from dominating a discussion -Striving to improve the navigational skills for itself and the students to be able to give easily understandable navigational instructions -Asking challenging questions that prompt students to think more deeply -Providing a prominent announcement area to communicate important up-to-date course information to students -Conveying the purpose of each assignment -Providing assignment feedback with information on where students focus on

	-Providing more informative and constructive feedback to students such as making distinctions between fact and opinion and presented divergent viewpoints -Asking critical questions when communicating with students about course assignments and activities -Providing meaningful feedback on student assignments in reasonable time frame -Guiding and eliciting student participation -Facilitating class discussions by encouraging, summarizing, etc. - Providing opportunities for students to "customize" their learning, and information gathering, synthesis, and analysis in solving problems -Providing alternative assignment options	their studies when they digress the main topic -Providing more informative and constructive feedback to students such as making distinctions between fact and opinion and presented divergent viewpoints -Asking critical questions when communicating with students about course assignments and activities -Providing meaningful feedback on student assignments in reasonable time frame -Guiding and eliciting student participation -Providing an open discussion forum where students could ask questions, and receive instructor feedback, about course content and activities -Providing alternative assignment options - Providing opportunities for students to "customize" their learning, and information gathering, synthesis, and analysis in solving problems
Weaknesses	-Being present, proactive and engaged in the course blackboard site -Demonstrating modeling of good discussion participation practices -Responding student inquiries in a timely manner -Opening a discussion forum where students can ask questions, and receive instructor feedback, about course content and activities	-Being present and engaged in the course blackboard site -Demonstrating modeling of good discussion participation practices -Responding student inquiries in a timely manner

As indicated in Table 22, both of the instructors accomplished utilizing the practices of blended learning better than they did in Phase 2. Each instructor's course Blackboard site was effectively used by providing course materials and additional learning materials for students to access anywhere and anytime, announcing important up-to-date course information such as reminders of impending assignments, and facilitating communication, engagement and interaction among students. Both instructors provided additional assignment opportunities that promoted a healthy exchange of ideas and experiences among students, and encouraged students to participate in active and collaborative learning activities under guidance of the instructors. They created synchronous and asynchronous discussion activities that enhanced learning through eliciting student participation such as sharing ideas, perspectives and experiences, and posting thoughtful reflections. It was also clear to realize that both instructors improved their technological skills such as a navigational skill through using technological learning resources. In addition, Instructor 2 provided extra interaction spaces for students to ask questions about assignments and class procedures, which helped alleviate students' common concerns. However, although both instructors began to spend more time contributing to discussions with clear and constructive comments, they should have been more present, proactive and engaging to be a model of good discussion participation. Both instructors should have provided detailed feedback on student assignments and inquiries in a timely manner.

In both cases, digital learning resources were used in a variety of ways to support teaching and learning. Table 23 shows the purpose of utilized learning resources and the level of benefits provided for the learning environments.

Table 23 *Summary of Learning Resources Used in Phase Three of Both Cases*

Use of Resource	**Instructor 1**		**Instructor 2**	
	Purpose of Use	**Level of Benefit**	**Purpose of Use**	**Level of Benefit**

Discussion Board	Allowing students to demonstrate their cognitive and critical thinking skills for thoughtful, in-depth reflection on a variety questions of course topics	Moderate	Allowing students to demonstrate their cognitive and critical thinking skills for writing thoughtful, in-depth reflections on a variety questions of course topics and Solving case scenarios under the instructor's guidance	Moderate
Open-Ended Question Quiz	Assessing student comprehensive understanding of topics in a chapter	Moderate	N/A	N/A
Google Document	Providing an online interactive platform in which monitoring, guiding and motivating students to solve case studies	High	Enhancing student engagement and complementing the face-to-face activities through the use of another effective online communication strategy	High
Multiple Choice Quiz	N/A	N/A	Testing students' comprehension of details and specific knowledge from multiple chapters	Moderate
Course Blackboard Site	-Providing content such as articles, reports, and case scenarios Providing schedule, and due dates -Assignment submission -Keeping track of student work, and sending bulk emails to the -Discussion Board activities -Grading and Commenting on student assignments - Providing file exchange areas	Moderate	-Providing content such as textbooks, articles, reports, case scenarios etc. and all learning materials, -Sharing additional learning materials such as PowerPoint presentations, video lectures, visual aids, and website links -Providing schedule, and due dates -Assignment submission -Keeping track of student work, and sending bulk emails to the students -Discussion Board activities - Providing a Q&A forum for assignments, deadlines, class procedures or concerns	High

			-Grading and Commenting on student assignments -Providing file exchange areas -Providing multiple choice quizzes	

Table 23 shows the similarities and differences of the use of the instructional resources. The main similarity was the utilization of discussion board activities. Both instructors created the space for online discussions to provide an opportunity for students to exhibit their cognitive and critical thinking skills for thoughtful, in-depth reflection on a variety of questions related to course topics. In addition to that, Instructor 2 had students solve complex problems through case scenarios under the instructor's guidance. Both instructors also created Google Documents. Although there were divergent goals of using the Google Documents, the main goal was to provide a study space, and interactive and collaborative platform under the instructors' guidance for both cases. On the other hand, Instructor 2 tested students' comprehension of details and specific knowledge through online multiple-choice quizzes, while Instructor 1 assigned students with online open-ended question quizzes to assess student comprehensive understanding. Finally, the way of utilizing the course Blackboard site was the major difference between the two cases. Instructor 2 used the course Blackboard site more comprehensively than Instructor 1 to provide educational materials, improve communication, and track and assess students.

According to the results of Phase Three of both cases, a part of the first research question of the study, "What practices are associated with making a blended learning course effective and efficient?", can be addressed. However, there will be detailed answers and discussions for the research questions according to the results of all intervention phases of both cases in the next chapter.

The use of Google Documents provided an online interactive and collaborative platform for students to be engaged in active learning activities for both cases. Specifically, utilizing Google Documents gave a chance for Instructor 1 to monitor, motivate and guide the students for making progress on solving their case studies. The students also benefitted from the Google Documents during face-to-face class. They had an opportunity to review their entire findings in a document to discuss, analyze, compare and contrast similarities, differences, and inconsistencies of their findings. Instructor 2 kept benefitting from the collaborative Google Document writing during this phase. This collaborative writing aided students to be active learners, collaboratively work each other, and enabled the instructor to provide customized learning and complement the face-to-face learning activities. The use of Google Documents provided quality learning experiences for both cases.

Providing various methods of measuring the success of the teaching and learning process was another significant practice of making a blended learning course effective and efficient. Both instructors utilized a variety of assessment tools such as online multiple choice and open-ended question quizzes and discussions activities through Blackboard and Google Documents. These alternative assessment methods also provided opportunities for students to customize their learning through gathering, analyzing and synthesizing information by studying on their own and collaboratively working in peer groups and all class in both cases. Instructor 2 also provided another discussion forum where students could ask questions about assignments and class procedures, which helped alleviate students' common concerns and anxiety, and facilitate effective online learning and improved educational outcomes. It was one of the notable differences between two cases.

One of the significant point was that both of the instructors must have established a social presence through being present, proactive and engaged in the course blackboard site by demonstrating modeling of good discussion participation practices and responding student inquiries for online discussions and assignments in a timely manner. Even though to some extent they were present, and encouraged student-instructor interaction and supported student-student interaction and collaboration, they should have devoted their more time to be a good model for online participation and guide students for facilitating online discussions and assignments.

Summary

The purpose of this multiple case design-based study was to design and implement a desired blended learning course for higher education instructors inexperienced in teaching a blended learning course. In accordance with this purpose, I worked with two Psychology instructors inexperienced in designing and teaching a blended learning course to (1) determine what elements were needed to assist them to create a blended learning course, (2) document their first experience of designing, implementing and teaching in a blended learning environment, and (3) unveil how each instructor's blended learning course affected student satisfaction. Qualitative and quantitative data were collected over the three iterative designed intervention phases. The purpose of this chapter was to present the results of these qualitative and quantitative data collections for each case. The data collections consisted of three instructor interviews, observation of iteratively designing, implementing, evaluating and redesigning the blended learning environments, and four surveys including the student initial course interest survey, the student latter course interest survey, and the two student instructional materials evaluation surveys. A detailed explanation of both cases as well as similarities and differences between both cases were

reported according to the analysis of these data collection instruments. The next chapter provides a comprehensive discussion of the results.

CHAPTER 5 DISCUSSION AND CONCLUSION

The overarching goal of this research study was to determine the elements needed to assist higher education instructors, who have never taught a blended learning course, in the design and implementation of an effective and efficient blended learning course. I examined the perceptions of the instructors related to their first experience teaching a blended learning course, and attempted to measure how these designed blended learning courses influenced student satisfaction.

The purpose of this fifth chapter is to synthesize my findings over three iterative phases toward answering the research study questions, present implications for the field of instructional design, exhibit the rational, significance and limitations of the study, and make recommendations for further research. The following research questions guided this study:

Q1. What practices are associated with making a blended learning course effective and efficient?

Q2. What are the instructors' perceptions about their first experience of teaching a blended learning course?

Q3. How does the blended learning course affect student satisfaction?

Q4. Does the iterative process of this design-based research study improve the effectiveness and efficiency of a blended learning course throughout the semester?

This design-based research study examined the perceptions of two psychology instructors about their first experience in designing, enacting and teaching a blended learning course, determined the best practices of constructing an optimal blended learning course within the three iterative designed interventions including Phase One/Week 4; Phase Two/Week 9; and, Phase Three/Week 14 and finally scrutinized the impact of teaching and learning on student satisfaction in the designed blended learning courses.

Blended learning is defined as the meticulous combination of the best practices of online and face-to-face learning in the study. However, this process can be very challenging for an instructor who has never taught a blended learning course when those who desire to create an effective blended learning course consider countless design and implementation possibilities of a blended learning course according to Kanuka and Garrison (2004). In order to cope with this challenge and create successful blended learning designs, I closely cooperated with two instructors in two different cases by employing appropriate technological processes and resources in their blended learning courses.

1. What practices are associated with making a blended learning course effective and efficient?

The first step was to redesign the course syllabi for both of the cases to theoretically integrate the best practices of online learning into the best practices of face-to-face learning. This step was a significant part of transforming the traditional course into the blended learning course. The attendance policy, course assignments, course requirements, office hours and course schedule were updated, and new learning activities and online communication guidelines were added in order to provide a clear contract, permanent record and learning tool for students. An optimal balance between face-to-face and online learning activities was constituted in order to facilitate accomplishing the intended educational goals of both courses. While deciding and planning possible approaches, strategies, techniques, and tools for designing and implementing the combination of the best features of face-to-face learning with the best features of online learning, it was crucial to take into account particular goals, the audience, and the context. In addition to that, it was significant to know the instructors in terms of their prior experiences, motivation, expectations, and concerns of using technological resources while seeking an optimal balance

between face-to-face and online learning activities. For instance, Instructor 1 had limited prior experience in employing technological processes and resources implied by "I've been old school…I haven't really done much besides just giving them links to articles and then we discuss them in class." On the other hand, Instructor 2 had prior knowledge of using technological resources but Instructor 2 had doubts about teaching a blended learning course implied by "my weaknesses include organizing material in an efficient manner" or "I don't want to create another burden." Knowing their prior experiences aided me to shape the design decisions of creating the blended learning courses and to decide what the instructional methods and strategies were implemented in the blended learning courses.

Secondly, both of the courses were based heavily on reading assignments. The primary goal was to create a teaching and learning environment in which the students were able to demonstrate their understanding of reading assignments by being immersed in critical thinking, problem solving, and collaborative activities. The course Blackboard sites were designed as a means to adopt these active learning approaches for both of the courses. The instructors and I jointly made the design of the Blackboard sites straightforward and organized in order to facilitate the instructors' utilization of the course Blackboard sites such as navigating in the Blackboard site, managing course content, editing course items, and to enable students to easily access and use course content, tools, information, and materials. One of the instructors indicated the importance of design by stating that

> "That [design of the course blackboard site] seems to be a very well-organized way of keeping everything together…" "I think what's improved for me was to have my class organized and release the material in a timely manner so it gave the students predictability in consistency and they knew exactly what they were coming into."

Besides, the course Blackboard sites were designed to increase communication between the instructors and students for both of the cases. In order to establish online communication, an announcement section was extensively and efficiently used to provide students for reminders, expectations and updates for their classes. The instructors also sent group emails to their class through the course Blackboard sites. In order to promote student engagement and increase interaction between instructor-student and student-student under the instructors' guidance, discussion board forums that were student-led discussions allowing students to create new threads were set up for all class or group discussions. General discussion forums were set up for the students to ask questions about assignments, deadlines, class procedures or concerns while group discussion focused specifically on discussing leading questions related to reading assignments. One of the instructors indicated the effectiveness of the discussion board activities by stating that "I think ultimately they learn a little bit better because they're held a little more accountable for the online discussion board" and another instructor pointed out how discussion activities contributed to active learning through reading, writing, talking, listening, and reflecting by stating that

> "what I require them (students) to do with the online discussions they definitely had to be active knowledge seekers. They couldn't just passively read the information and then sit back and not really talk in class and I think it encouraged them to work collaboratively with their classmates."

In addition to that, all course documents such as the syllabus, learning materials including textbooks if applicable, articles, PowerPoint presentations, reports, case scenarios, and videos were uploaded to the course Blackboard sites so that the students always had access to the course materials. The instructors also gave assignments, received assignment submissions, assessed

student assignments, provided library resources, made online tests, and graded tests through the course Blackboard sites. This way of using these tools and resources facilitated interaction between student and content. One of the instructors stated that

> "I have always learned some different ways to use technology but I was skeptical like it won't work for my class…. It worked better than my expectation…I will copy the course for the next semester and then using the same layout."

Google Documents were used to expand the interactive and collaborative learning assignments in order to engage the students in active learning activities. Using Google Documents enabled the students to enhance their critical thinking, problem solving, written communication and collaboration skills. Therefore, more effective use of case studies, collaborative writing assignments and other forms of collaborative activities was achieved through utilizing Google documents. Instructor 1 indicated the efficiency of using Google Documents by stating that

> "Better than my expectation was the group product documents, the Google documents…A group product where everybody put their information into two big different tables and then we were all able to go through it and do a compare and contrast across everybody's insertions into the tables. That was good"

Instructor 2 pointed out the contribution of using Google documents to effective, meaningful and deep learning by saying that

> "The takeaway that we implemented with the Google Docs I think was a strength that I didn't really see ahead. I think that produced the greatest benefit for the class… I think initially with the takeaway Google Docs being able to just write out some thoughts about what was interesting but what was something to think about made each class more in-depth and they were able to think more deeply about

it…when I went home after class and sat at night and I went to the google docs, I saw deeper learning happing there. That's where I saw people express themselves like they didn't say anything in the class but they expressed themselves there. It really hits me. I didn't even think about it like this."

It is also noted that the course Blackboard sites and Google Documents were easily accessible and usable by the instructors and students. These ubiquitous, collaborative and interactive technologies were intentionally chosen to utilize as a means of adopting more active learning activities because of their easiness of usage, management, design, and implementation. They were also compatible with mobile devices which facilitated elimination of the boundaries of traditional learning such as time and place between the students and their instructors, and allowed the students to reach course content anywhere and anytime as far as they had Internet access.

Table 24 shows the summary of what resources were utilized, what the aim of designing and implementing each resource was, and what the overall level of benefit of each resource was for each studied case.

Table 24 *Summary of Learning Resources Used in Both Cases*

Use of Resource	**Instructor 1**		**Instructor 2**	
	Purpose of Use	**Level of Benefit**	**Purpose of Use**	**Level of Benefit**
Discussion Board	Allowing students to demonstrate their cognitive and critical thinking skills for thoughtful, in-depth reflection on a variety questions of course topics	Moderate	Allowing students to demonstrate their cognitive and critical thinking skills for writing thoughtful, in-depth reflections on a variety questions of course topics and Solving case scenarios under the instructor's guidance	Moderate
Open-Ended	Assessing student comprehensive	Moderate	N/A	N/A

Question Quiz	understanding of topics in a chapter			
Google Document	Providing an online interactive platform in which monitoring, guiding and motivating students to solve case studies and complementing the face-to-face activities through the use of another effective online communication strategy	High	Enhancing student engagement and complementing the face-to-face activities through the use of another effective online communication strategy	High
Multiple Choice Quiz	N/A	N/A	Testing students' comprehension of details and specific knowledge from multiple chapters	Moderate
Course Blackboard Site	-Providing content such as articles, reports, and case scenarios Providing schedule, and due dates -Assignment submission -Keeping track of student work, and sending bulk emails to the -Discussion Board activities -Grading and Commenting on student assignments - Providing file exchange areas	Moderate	-Providing content such as textbooks, articles, reports, case scenarios etc. and all learning materials, -Sharing additional learning materials such as PowerPoint presentations, video lectures, visual aids, and website links -Providing schedule, and due dates -Assignment submission -Keeping track of student work, and sending bulk emails to the students -Discussion Board activities - Providing a Q&A forum for assignments, deadlines, class procedures or concerns -Grading and Commenting on student assignments -Providing file exchange areas -Providing multiple choice quizzes	High

2. What are the instructors' perceptions about their first experience of teaching a blended learning course?

It was the intent of this study to find out the instructors' sense of their experience after their efforts of designing, implementing and teaching a blended learning course. Both instructors perceived their designed blended learning course as a beneficial learning environment overall. Although both instructors were initially doubtful whether blended learning would be obstacle for teaching and learning or they would take full advantage of blended learning, they faithfully indicated that blended learning promoted their teaching experience. Instructor 1 stated that "my overall perception is that it was helpful in alleviating too much in class…the version of a blended learning course you and I create it together it works pretty well…better than my expectation." Instructor 2 stated "I was a little hesitant at first but I think it worked well. I was very pleased." The discernable four benefits of teaching the designed blended learning course that were emphasized by instructor 1 were (1) to help the students embrace deep learning, "I think they learned more than they had learned in the prior semester;" (2) to make student assessment easier, "they [online learning activities] allowed me to assess without taking up class time;" (3) to increase student's responsibility of their learning such as being an active learner, "they definitely had to be active knowledge seekers. They couldn't just passively read the information and sit back in class…They are accountable more, the online stuff makes them more accountable;" (4) to provide a supplementary teaching environment, "what it did for me personally is that help alleviate having too much that I had to cover…I could accomplish a similar thing in class but it just sucks up more time and they would never go as deep." In Case Two, the distinguished benefits of teaching the designed blended learning course that were stressed by Instructor 2 were (1) to create an optimal learning environment for the students, "It was more structured and it was actually productive…

You helped me organize the class in a great way;" (2) to facilitate deeper learning for the students "they had to work a little bit harder… I went to the Google Docs, I saw deeper learning happening there;" (3) to enable the instructor to utilize strategies for enhancement of interactions and engagement, "I think they had actually more interactions than any other semesters I've had with students using online and in-class materials…I think we had online materials to engage students;" (4) to heighten student attention to their learning, "we organize and release the material in a timely manner so it gave the students predictability in consistency and they know exactly what they were coming into…they were really excited about having materials ahead of time."

Both of the instructors perceived the use of Google Docs as the most beneficial collaborative tool to enhance the quality of teaching and learning in their blended learning course. The aims of using this collaborative tool were distinct for each case. In addition to that, using the tool was particularly an efficient means of synchronous and asynchronous communication that enabled students to effectively work together through sharing knowledge and ideas with the group, developing of concepts, reviewing contributions of each peer, and giving and receiving supportive feedback from peers under the instructors' guidance in each case. Instructor 1 praised the use of it by stating that

> "That was excellent… A group product where everybody put their information into two big different tables and then we were all able to go through it and do a compare and contrast across everybody's insertions into the table… the group products, Google Docs, definitively made them work more collaboratively and invest time for learning."

Instructor 2 exalted the utilization of Google Docs by indicating that

> "One thing that I've noticed coming out of this is the Google Docs has been very value-added experience for this class… I think the Google Doc is one element that has given them a different way to engage…I think that produced the greatest benefit for the class."

While both instructors pointed out their opinions on teaching a blended course as a creation of innovative design and successful implementation experience, they also emphatically indicated that a significant barrier to teaching a blended learning course was their time limitation. They implied that teaching a blended learning course requires extra time allocation to interact with students in the online learning environment, give extra feedback on student online assignments, and be motivating and engaging at all times. Some quotes show their implication as follows

> (Instructor 1) "I could spend more time I probably didn't do a good enough job," "I don't have as much time available to spend on discussion board," (Instructor 2) "I just haven't put the energy or the time," "My own time challenges were not being able to spend a lot of time online for the online discussions."

The instructors just indicated their time limitation as the only barrier to teaching a blended learning course. However, Ocak (2011) asserted that technical issues such as facing any problems while employing a new technology might hamper teaching a blended learning course. In the studied cases, I closely worked with the instructors throughout the studied time frame. In this respect, I was always available to provide technical support in order to help them cope with their technological problems. However, the IT desk could resolve the technical problems they faced while teaching their blended learning course, which are available in many U.S. universities.

According to the interview results, Table 25 demonstrates changes in the instructors' perceptions about their first experience of designing and teaching a blended learning course over the three iterative designed intervention phases.

Table 25 *Changes in Instructors' Perceptions Throughout Phases*

Instructor Perception	**Instructor 1**			**Instructor 2**		
	Phase 1	**Phase 2**	**Phase 3**	**Phase 1**	**Phase 2**	**Phase 3**
Prior experience	Very Low	N/A	N/A	Low	N/A	N/A
Motivation to change	Moderate	Moderate	High	Moderate	Moderate	High
Expectation	N/A	High	N/A	High	High	N/A
Benefit	N/A	Moderate	High	N/A	High	High
Ambiguity/Concern	High	Moderate	Low	Moderate	Moderate	Low
Limitation	N/A	High	Moderate	N/A	High	Moderate
Resistance	N/A	Moderate	Low	Moderate	Moderate	Low

As Table 25 shows, the distinct obstacle to design and teach an effective and efficient blended learning course was a limitation that both instructors had limited time to devote to teach a blended learning course. However, they strived to make more efforts to establish a consistent online presence, keep track of the students' activities and guide students for their learning in the successive phases. Furthermore, both instructors believed that they benefited from blended learning as an efficient means of increasing access and flexibility, and an effective instructional practice of enhancing their teaching and learning practices. As indicated by Instructor 1, "I will make more classes in the future" and by Instructor 2, "I copied the course again for next semester and then using the same lay out". From the interviews overall, what the notable result was that the designed and implemented blended learning courses promoted effective pedagogical practices such as improving interactive and collaborative learning strategies, active learning strategies and learner-centered strategies. Ultimately, both instructors were satisfied with teaching the right

combination of online and face-to-face learning by utilizing suitable technologies, activities and learning strategies according to their personal reflection.

3. How does the blended learning course affect student satisfaction?

The Course Interest Survey (CIS) developed by Keller (1987) was designed as a means of measuring student perceptions of motivation for a particular setting. The setting in this study was two psychology courses taught by two instructors in the created blended learning environments. There were eleven students consisting of one male and ten female participants in one of the psychology courses (Case One) and twenty-three students consisting of two male and twenty-one female participants in the other psychology course (Case Two). The purpose of using this instrument was to determine whether there is any change in the students' motivation level between the beginning of the semester and the end of the semester. The difference between the students' motivation level in the beginning of the semester and the end of the semester was measured by performing a paired t-test through SPSS in each case. Results of the paired t-test will be presented as follows.

The results of the data analysis determined that there is no significant difference in the mean score between the beginning of the semester and the end of the semester with regard to the students' motivation level in both cases. Even though this finding can be inferred that the designed blended learning courses did not significantly enhance the level of motivation in both cases, there was an increase of student motivation level at the end of the semester in both cases. In Case One, a mean score increased 0.23 points ([Group Pre-Test was 3.74] and [Group Posts-test was 3.97]). Also, a mean score increased 0.46 ([Group Pre-Test was 3.35] and [Group Posts-test was 3.81]) for Satisfaction (one of the subcategories of Keller's model) level. In Case Two, a mean score increased 0.12 points ([Group Pre-Test was 4.15] and [Group Posts-test was 4.27]). Also, a mean

score increased 0.36 ([Group Pre-Test was 3.83] and [Group Posts-test was 4.19]) for Satisfaction level. Although the difference between the pretest scores and the posttest scores wasn't statistically significant, the implication of these findings aligns with previous research on an effective blended learning environment that plays role in enhancing student satisfaction (Bradley et al., 2007; Drysdale et al., 2013; Halverson et al., 2014; Woltering et al., 2009).

4. Does the iterative process of this design-based research study improve the effectiveness and efficiency of a blended learning course throughout the semester?

According to Wang & Hannafin (2005), design-based research study requires a researcher to collaborate with a practitioner(s) in order to enhance an educational practice in a real world setting through iterative analysis, design, development and implementation in a systematic but flexible way. In this sense, based on the qualitative and quantitative data analysis, the iterative process of the design-based research study did improve the effectiveness and efficiency of blended learning courses throughout the semester in both cases. The design and implementation of effective and efficient blended learning courses were achieved in this study by assisting and cooperating with two psychology instructors who had never taught a blended learning course until this study. Through the process of three iterative design cycles, collected information contributed to redesigning and implementing the learning environments, which heightened the quality of the educational experience.

First of all, the integration of online learning into face-to-face learning was strengthened through providing opportunities for students to ask further questions during online learning about what remained unclear in face-to-face instruction, and to bring significant ideas that emerged from online learning to face-to-face learning to discuss further. Both instructors were not actively present, proactive and engaging in online activities and not able to effectively combine the best

features of both online and face-to-face learning at the beginning of the semester according to my observations and analysis of the learning environments. However, the effectiveness of the blended learning courses was being expanded through the iterative process of redesigning the learning environments. It was achieved through the instructors' extra efforts by spending more time for online activities to guide and elicit student participation and making further clarifications on what remained an unresolved issue in either online or face-to-face learning, although their efforts were insufficient to be good model for online participation.

Secondly, according to Graham (2006), blended learning has widely been cited as "more effective pedagogical practices", specifically in terms of enabling teachers to shift from a passive teacher-approach to a transactional collaborative approach in which students become active and interactive learners. This shift was achieved through increasing active learning strategies and improving peer-to-peer learning strategies such as modifying or adding interactive learning activities within the 14-week Fall 2016 semester. In this sense, creating dynamic Google Docs and interactive discussion board activities are noticeable examples that both instructors capitalized on according to my observation of the learning environments and the results of instructors' interviews. The instructors and I also made major and/or minor changes to maximize the effectiveness and efficiency of the activities throughout the semester in accordance with the research method.

Lastly, Wenger and Ferguson (2006) stated that the instructor's roles in designing and implementing blended learning must be determined for ensuring quality learning experience (p. 79). These roles can be diverse, and important roles include coaching, mentoring and counseling (Bonk, Kim, & Zeng, 2006, p.564). Both instructors were encouraged to play these significant roles in order to optimize the efficiency and effectiveness of learning activities and maximize the quality of learning experience through iterative design cycles of this study. The instructors became

better teacher in their blended learning course through each subsequent cycle in engaging students in collaborative and personalized tasks with their support and guidance and responded students' diverse learning inquiries. They tailored assignments according to students' interests and needs, and also gave informative and constructive feedback on their assignments. They also elicited student engagement by promoting a healthy exchange of information and ideas under their guidance. In addition to that, instructors enhanced their technological skills over three iterative cycles of the study. They provided and edited course content, managed digital learning materials and technological tools, and took part in designing an online learning environment.

Implications for Learning Design and Technology

The findings of this study provided diverse implications that have enormous potential as another empirical body of research to impact the instructional technology field. Results from extensive qualitative data collection identified practical and useful design factors that should be taken into consideration while designing and implementing a blended learning course particularly for those who have never had experience or limited experience in teaching a blended learning course. These design factors may assist them in addressing the issue of integrating the best features of face-to-face learning and the best features of online learning.

One of the purposes of this study was to determine the instructors' perceptions of teaching a blended learning course and their active role in selecting, utilizing and managing appropriate technological processes and resources to design, implement and evaluate the blended learning environment through the semester. The findings from this study revealed that the instructors' overall perceptions of designing and teaching a blended learning course were positive even though they were initially skeptical about a possibility of failing to convert their traditional face-to-face course to a blended learning course, and prejudiced toward the potential and promising benefits of

blended learning such as enhanced pedagogy, and increased access and flexibility as cited in Graham et al. (2005), Graham (2006), and Osguthorpe and Graham (2003). In this sense, it is vital for instructional designers to consider keeping blended learning environment straightforward and organized when constructing blended learning. In this way, an instructor who has never had experience in teaching a blended learning course can manage, utilize and modify the learning environment and play a role in the uncomplicated designing process. These humble design guidelines help the instructor realize the benefits of blended learning in the early stage of the implementation of the course. When the instructor discerns the benefits of combining the best practices of online and face-to-face learning, blended learning is embraced by the instructor as an advantageous learning environment.

Blended learning has commonly been exalted as a way of enhancing student learning through collaborative learning strategies and active student engagement (Garrison & Kanuka, 2004; Hoic-Bozic et al., 2009; Twigg, 2003). This study demonstrated how collaborative learning and active learning strategies were used by means of technological tools and instructors' positive attitude and behavior toward employing these strategies in blended learning courses. As it was stated in the first chapter, this study was grounded in constructivist design theory and cognitive learning theory. All learning strategies with resources such as tools, technologies and materials were designed in the light of constructivist design theory and cognitive learning theory to facilitate learning. For instance, Richey et al. (2011) state three fundamental constructivist design principles.

"Learning results from a personal interpretation of experience.

Learning is an active process occurring in realistic and relevant situations.

Learning results from an exploration of multiple perspectives" (p.130).

While the blended learning courses were being designed according to these basic principles, cognitivist principles were utilized to facilitate information processing through applying Mayer's (2012) multimedia principles. What Robinson et al. (2008) call this integration of using different theories is an eclectic perspective (p.38) and the sort of synthesized principles within this eclectic perspective worked well in practice for this study. This finding also matches with Hoic –Bozic, et al. (2009)'s study in which they created a blended e-learning model by employing constructivist and cognitivist elements. In this sense, it may be beneficial to consider an eclectic perspective for instructional designers when designing a blended learning environment.

This design-based study through the process of three iterative design cycles demonstrated that the design and implementation of each blended learning course was becoming more advanced as the study proceeded to the next cycle in virtue of being able to obtain feedback from instructors and students, and monitor the learning environment. I believe that this systematic approach enables instructional designers to practice rapid processing of reanalysis, redesign, implementation and reevaluation in order to optimize blended learning. In this regard, it is strongly suggested that instructional designers should consider at least two design implementations like an initial-latter design implementation. In this way, they will have a chance to conduct direct analysis and evaluation of their real-life implementation of blended learning in the studied context in terms of enhancing instructor engagement, deepening student collaboration, and increasing effective and efficient design overall. It should be noted that this study showed that just modifying discussion questions, such as shifting from asking merely factual questions to asking probing questions caused substantial change in the effectiveness and efficiency of learning in a positive way.

Rational and Significance of the Study

The rationale behind this study emerged from my desire to find the best methods of designing, developing, implementing, and redesigning an effective and efficient blended learning course for instructors who have never taught their courses in a blended learning environment. The literature indicated that a gap exists between why instructors choose a blended learning approach (Garrison & Kanuka, 2004; Graham, 2006; Graham, Allen, & Ure, 2005), how and when to deliver course content in a blended learning environment (Foo, 2014; Hoic-Bozic, Mornar & Boticki, 2009; Rossett, Douglis & Frazee, 2003), and how to design and implement a blended learning course for an inexperienced instructor in teaching a blended learning course in higher education. Even though a blended learning approach is identified as an effective alternative learning environment (Chou & Chou, 2011; Garrison & Kanuka, 2004; Graham, 2006; Wu et al., 2010), what steps inexperienced instructors should take; what kinds of obstacles they may face; how they can determine appropriate technological processes and resources to employ; how they can refine the learning environment to create an optimal learning environment; and how they are able to motivate students to learn while the students take full advantage of the learning environment throughout a blended learning course were not discussed in a holistic way. The significance of this study was to design and explore the whole range of designed innovations in order to bridge the gap between teaching a blended learning course and designing a blended learning course. The study provided insight for inexperienced instructors about designing and teaching an effective and efficient blended learning course by mixing empirical educational research with the theory-driven design of the learning environment in real life practices.

Limitations of the Study

A significant limitation in this study could be the absence of follow-up interviews with the instructors to obtain further information about whether they continue to teach blended learning course(s) after the study. If they teach a blended learning course as they stated their willingness of teaching it during the study, asking the follow-up questions to the instructors can be very beneficial to see the effects of the study in the long run. The possible questions could be how do you design and implement a blended learning course by yourself, how do you manage teaching a blended learning course, do you face any problems while designing or teaching and so on in order to have a deep understanding of practical significance of this design-based research study in the long run, and make the implications of the study for instructional design more acceptable and dependable.

Other potential limitation of this study could be participants who were limited to eleven psychology students for Case One and twenty-three psychology students for Case Two. Although this multiple case design-based study provided practical significance to instructors, instructional designers and those who are eager to design and implement an optimal blended learning course, any quantitative data results could not show significance. Specifically, while the results demonstrated an increase of student satisfaction level in both cases, there was not statistically significant difference in the mean score between student satisfaction level in the beginning of course and the end of the course in each case because of a strong possibility that lacks number of the participants. However, I would elicit statistical significance and strengthen and deepen the findings of the study with a multiplication number of participants.

Finally, Guala (2003) stated that "problems of internal validity are chronologically and epistemically antecedent to problems of external validity" (p.1198). The internal validity was ensured for this study. However, there was limited external validity as the study was conducted in

only one university although the university I selected to work in is one of the largest university in the North America and the faculty members I worked with through the study are distinguished professors in their realm of expertise for the study. Specifically, the graduate students who took a part in the study also were sampled from the same university, which means that the findings related to the students are subject to graduate students in the psychology department at this university. The results depending on the students is not likely to generalize due to the sample risks. Therefore, drawing a generalizable conclusion about students who had no opportunity to contribute data is not possible, in other words, the study lacks external validity.

Recommendations

This study might be beneficial to contribute to existing literature in terms of understanding those who lack designing and teaching experience of a blended learning course while combining conventional and innovative technologies, and finding suitable and effective ways of assisting them to redesign their traditional courses to make their courses more engaging, interactive, and accessible by employing appropriate technological processes and resources. However, as it is indicated throughout the chapters of this dissertation, there are many other possibilities of designing blended learning that could be implemented to broaden the findings from this study. Additional studies of blended learning focusing on students might have direct impact on what to modify in a designed blended learning environment according to just students' needs, attitudes and expectations.

Future research should focus on instructors, educators, trainers, or teachers who worked with an instructional designer for getting assistance to design and implement a blended learning environment but who has had a relatively lack of experience in building and teaching a blended learning environment on their own at present. That would give an opportunity to continue an

exploration of how they design and implement a blended learning course on their own and their perception about their experience of teaching it alone. This exploration would show additional challenges such as organizational or planning problems or technological problems they encounter while designing, implementing and teaching a blended learning course, and how they struggle to cope with these challenges by themselves.

In the current study, the focal point was to provide insight into instructors' perception about utilizing a novel approach to teaching and learning. The focal point would be shifted from instructors to students to unveil their satisfaction or dissatisfaction with the learning experience in detail and discover the best ways of enhancing their learning experience. Interviewing a sample of students with open-ended survey questions in addition to using questionnaires to collect data provides insight into students' perception about the quality of their educational experiences, and helps instructional designers comprehend of what practices work well in a designed blended learning course from the viewpoint of students to meet their needs and expectations.

As it is indicated throughout the chapters of this study, the method of the study was design-based research. Design-based research is a successive series of approaches that enhance educational practices through impacting learning and teaching (Barab & Squire, 2004) and the main aim of this study overlapped the direction of design-based research. It was also shown in this chapter how this method was constructively influential for the research practices of this study in the process of improving effectiveness and efficiency of designing and implementing a blended learning course. This research was conducted over a relatively long period of time and can take a place in the literature as an accomplished case of design-based research according to the processes and results of this practice as indicated in Design Based Research Collective (2003), "successful examples of design-based research often are conducted within a single setting over a long time."

However, a replication of this study over a longer or shorter period of time should be conducted in order to measure how design-based research impacts learning and teaching in a blended learning environment.

Finally, I would have utilized emerging technologies such augmented reality, virtual reality or simulations while designing the blended learning courses within the current study. Instead, the use of technological resources and technologies for this study was chosen according to the nature of the instructional goals, student characteristics, instructor background, course content and online resources in order to create, improve, and sustain effectiveness and efficiency of blended learning courses. However, if it is applicable, insight into the impact of using emerging technologies in a blended learning environment that is built for those who have never taught can be gained in order to contribute to our body of knowledge about the design of emerging technologies and the impact of using them in a blended learning environment.

Summary

The purpose of this study was to explore what elements are required to help two higher education instructors, who are solely unpracticed in designing and teaching a blended learning course, in order to construct an optimal blended learning course and examine the impact of teaching and learning in a blended learning course on students' satisfaction. In accordance of the purpose of the study, four research questions posed in Chapter One were answered. The study began with establishing a strong rapport with the instructors and then advanced on designing and implementing a blended learning course. Based on the perceptions of the instructors, student feedback, and the principles of constructivist design theory, cognitive learning theory and ARCS motivational design strategy in this study determined the practices that are associated with creating an effective and efficient blended learning course.

The instructors were very contented that they were able to take a part of designing and implementing a blended learning course and teaching it. They explored how blended learning increased the quality of teaching and learning practices in terms of "pedagogic richness" and "improved access and flexibility" (Graham, 2006, p. 9) through taking full advantage of utilizing interactive and collaborative learning strategies, active learning strategies, and learner-centered strategies by adopting technological resources and technologies in educationally appropriate ways. The appropriate technological resources and technologies were chosen to employ in teaching and learning practices by considering instructional goals, student characteristics, instructor background, and course content. Also, they were designed and implemented in accordance with the cognitivist and constructivist design principles as Robinson et al. (2008) cited this combination of principles from different theories as an "eclectic perspective" in the literature (p. 38). Lastly, the iterative design cycles of this design-based research helped detect what didn't work, what could be improved, and what worked well within practicing the designed blended learning course. These iterative processes were an exploration and redesign of the created blended learning courses for finding out a better way of integrating face-to-face and online learning in order to ultimately reach the best thoughtful combination of face-to-face and online learning in the studied context.

APPENDIX A

HIC Approval

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NOTICE OF EXPEDITED APPROVAL

To: Ahmet Ustun
Administration & Organization Stud

From: Dr. Deborah Ellis or designee M- Campbell, Ph.D / 2-2
Chairperson, Behavioral Institutional Review Board (B3)

Date: August 19, 2016

RE: IRB #: 068116B3E

Protocol Title: Moving toward blended learning learning: A multiple case design based research study in higher education

Funding Source:

Protocol #: 1607015074

Expiration Date: August 18, 2017

Risk Level / Category: Research not involving greater than minimal risk

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The above-referenced protocol and items listed below (if applicable) were **APPROVED** following *Expedited Review* Category (#6 #7)* by the Chairperson/designee *for* the Wayne State University Institutional Review Board (B3) for the period of 08/19/2016 through 08/18/2017. This approval does not replace any departmental or other approvals that may be required.

- Revised Protocol Summary Form (revision received in the IRB office 08/12/16)
- Research Protocol - Dissertation (dated 2016 received in the IRB office 06/28/16)
- Medical records are not being accessed therefore HIPAA does not apply
- Research Infored Consent – Student (revision dated 08/19/2016)
- Research Informed Consent – Instructor (revision dated 08/19/2016)
- Data Collection Tools (7): i) Appendix D – Instructor Initial Design Semi-structured Interview, ii) Appendix E - Instructor Design Improvement Semi-structured Interview, iii) Appendix F - Instructor Experience Evaluation Semi-structured Interview, iv) Appendix G - Instructor Intervention Observation, v) Appendix H – Initial Course Interest Survey, vi) Appendix I – Latter Course Interest Survey and vii) Instructional Materials Motivation Survey

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- Federal regulations require that all research be reviewed at least annually. You *may* receive a *"Continuation Renewal Reminder"* approximately two months prior to the expiration date; however, it is the Principal Investigator's responsibility to obtain review and continued approval **before** the expiration date. Data collected during a period of lapsed approval is unapproved research and can never be reported or published as research data.
- All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.
- Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (http://www.irb.wayne.edu/policies-human-research.php).

NOTE:

1. Upon notification of an impending regulatory site visit, hold notification, and/or external audit the IRB Administration Office must be contacted immediately.
2. Forms should be downloaded from the IRB website at **each** use.

*Based on the Expedited Review List, revised November 1998

Notify the IRB of any changes to the funding status of the above-referenced protocol.

APPENDIX B

Instructor Research Informed Consent

Title of Study: Moving toward blended learning: A multiple case design based research study in higher education

Principal Investigator (PI): Ahmet Berk Ustun
Learning Design & Technology (IT)
248 817 9089

When we say "you" in this consent form, we mean you; "we" means the researchers and other staff.

Purpose

You are being asked to be in a research study of designing and implementing a desired blended learning course for an instructor who has never taught a blended learning course because you are an instructor who has never taught a blended learning course. This study is being conducted at Wayne State University. The estimated number of study participants to be enrolled at Wayne State University is about 2 instructors as well as about 48 students throughout the US. **Please read this form and ask any questions you may have before agreeing to be in the study.**

In this research study, we determine what elements are needed to assist two higher education instructors who are just inexperienced in designing and teaching a blended learning course to successfully design and implement it, and reveal how this blended learning course affects student satisfaction.

Study Procedures

If you agree to take part in this research study, you will be asked to (a) meet with me in person for 30 minutes to launch the study; (b) answer interview questions four times through the semester, which will take approximately 30 minutes each time, (c) teach a blended learning course (d) tell your perception about the design and development of a desired blended learning course as well as your feelings, and experiences of teaching a blended learning course.
During the initial meeting, I will (a) validate that you meet the study requirement, (b) ask you to sign a consent, (c) discuss overall process and timeline of the study, (d) determine your strengths and weaknesses of using online tools, and (e) design initial blended learning environment. The second and third meeting will be for improvement of blended learning environment. Finally, the last meeting will be for evaluation of the blended learning course from your point of view. Audiotaping will be used to record each meeting.

Benefits

As a participant in this research study, there may be no direct benefit for you; however, the potential benefit to you for taking part in this research study may be that you will experience teaching a blended learning course, and acquire knowledge and skills in designing and developing a blended learning environment and information from this study may benefit other people now or in the future.

Risks

By taking part in this study, you may experience the following risk: Social risks (possible loss of confidentiality). However, I will take all possible precautions that minimize this risk. When the results of this research are published or discussed in conferences, no information will be included that would reveal your identity. Audiotapes will be destroyed after I analyze them.

Study Costs

- Participation in this study will be of no cost to you.

Compensation

You will not be paid for taking part in this study.

Confidentiality

All information collected about you during the course of this study will be kept confidential to the extent permitted by law. You will be identified in the research records by a code name or number. Information that identifies you personally will not be released without your written permission. However, the study sponsor, the Institutional Review Board (IRB) at Wayne State University, or federal agencies with appropriate regulatory oversight [e.g., Food and Drug Administration (FDA), Office for Human Research Protections (OHRP), Office of Civil Rights (OCR), etc.) may review your records.

When the results of this research are published or discussed in conferences, no information will be included that would reveal your identity.

If photographs, videos, or audiotape recordings of you will be used for research or educational purposes, your identity will be protected or disguised. All recordings will be destroyed right after we analyze them.

Voluntary Participation/Withdrawal

Taking part in this study is voluntary. You have the right to choose not to take part in this study. If you decide to take part in the study you can later change your mind and withdraw from the study. You are free to only answer questions that you want to answer. You are free to withdraw from participation in this study at any time. Your decisions will not change any present or future

relationship with Wayne State University or its affiliates, or other services you are entitled to receive.

The PI may stop your participation in this study without your consent. The PI will make the decision and let you know if it is not possible for you to continue. The decision that is made is to protect your health and safety, or because you did not follow the instructions to take part in the study

Questions

If you have any questions about this study now or in the future, you may contact Ahmet Berk Ustun or one of his research team members at the following phone number 248 817 9089. If you have questions or concerns about your rights as a research participant, the Chair of the Institutional Review Board can be contacted at (313) 577-1628. If you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call the Wayne State Research Subject Advocate at (313) 577-1628 to discuss problems, obtain information, or offer input.

Consent to Participate in a Research Study

To voluntarily agree to take part in this study, you must sign on the line below. If you choose to take part in this study you may withdraw at any time. You are not giving up any of your legal rights by signing this form. Your signature below indicates that you have read, or had read to you, this entire consent form, including the risks and benefits, and have had all of your questions answered. You will be given a copy of this consent form.

_____	_____
Signature of participant	Date
_____	_____
Printed name of participant	Time
_____	_____
Signature of witness**	Date
_____	_____
Printed of witness**	Time
_____	_____
Signature of person obtaining consent	Date
_____	_____
Printed name of person obtaining consent	Time

******Use when participant has had this consent form read to them (i.e., illiterate, legally blind, translated into foreign language).

APPENDIX C

Students Research Informed Consent

Title of Study: Moving toward blended learning: A multiple case design based research study in higher education

Principal Investigator (PI): Ahmet Berk Ustun
Learning Design & Technology (IT)
248 817 9089

When we say "you" in this consent form, we mean you; "we" means the researchers and other staff.

Purpose

You are being asked to be in a research study of designing and implementing a desired blended learning course for an instructor because you are a student of the instructor whom I work with. This study is being conducted at Wayne State University. The estimated number of study participants to be enrolled at Wayne State University is about 2 instructors as well as about 48 students throughout the US. **Please read this form and ask any questions you may have before agreeing to be in the study.**

In this research study, we determine appropriate technological processes and resources to employ in a blended learning course; determine the instructors' opinions on creating an effective and efficient blended learning course through the semester; determine if the use of strategies in blended learning meets the students' needs, which results in a positive impact on students' satisfaction; determine if the evolving strategies fed by empirical studies, theories, and practices have a strong potential to design an effective and efficient blended learning course overall.

Study Procedures

If you agree to take part in this research study, you will be asked to complete two 34 question surveys and two 36 question surveys during the fall semester. The first survey (34 question survey) will be passed out during class time in the third week of the semester, the second survey (36 question survey) will be passed out in the sixth week of the semester, the third survey (36 question survey) will be passed out in the eleventh week of the semester, and the final survey (34 question survey) will be passed out in the end of the semester. Each survey will take approximately 10 - 20 minutes to complete.

Benefits

As a participant in this research study, there may be no direct benefit for you; however, the potential benefit to you for taking part in this research study may be that you will contribute to improve the learning environment in which you study, learn, and are taught, and information from this study may benefit other people now or in the future.

Risks

By taking part in this study, you may experience the following risk: Social risks (possible loss of confidentiality). However, I will take all possible precautions that minimize this risk. When the results of this research are published or discussed in conferences, no information will be included that would reveal your identity. Also, study codes on data documents (e.g.. coder-1) will be used instead of your name to protect your identity. We will securely store data documents within locked locations and all documents will destroyed after we analyze them.

Study Costs

- Participation in this study will be of no cost to you.

Compensation

You will not be paid for taking part in this study.

Confidentiality

All information collected about you during the course of this study will be kept confidential to the extent permitted by law. You will be identified in the research records by a code name or number. Information that identifies you personally will not be released without your written permission. However, the study sponsor, the Institutional Review Board (IRB) at Wayne State University, or federal agencies with appropriate regulatory oversight [e.g., Food and Drug Administration (FDA), Office for Human Research Protections (OHRP), Office of Civil Rights (OCR), etc.) may review your records.

When the results of this research are published or discussed in conferences, no information will be included that would reveal your identity.

If photographs, videos, or audiotape recordings of you will be used for research or educational purposes, your identity will be protected or disguised. All recordings will be destroyed right after we analyze them.

Voluntary Participation/Withdrawal

Taking part in this study is voluntary. You have the right to choose not to take part in this study. If you decide to take part in the study you can later change your mind and withdraw from the study. You are free to only answer questions that you want to answer. You are free to withdraw from participation in this study at any time. Your decisions will not change any present or future relationship with Wayne State University or its affiliates, or other services you are entitled to receive.

The PI may stop your participation in this study without your consent. The PI will make the decision and let you know if it is not possible for you to continue. The decision that is made is to protect your health and safety, or because you did not follow the instructions to take part in the study

Questions

If you have any questions about this study now or in the future, you may contact Ahmet Berk Ustun or one of his research team members at the following phone number 248 817 9089. If you have questions or concerns about your rights as a research participant, the Chair of the Institutional Review Board can be contacted at (313) 577-1628. If you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call the Wayne State Research Subject Advocate at (313) 577-1628 to discuss problems, obtain information, or offer input.

Consent to Participate in a Research Study

To voluntarily agree to take part in this study, you must sign on the line below. If you choose to take part in this study you may withdraw at any time. You are not giving up any of your legal rights by signing this form. Your signature below indicates that you have read, or had read to you, this entire consent form, including the risks and benefits, and have had all of your questions answered. You will be given a copy of this consent form.

_____	_____
Signature of participant	Date
_____	_____
Printed name of participant	Time
_____	_____
Signature of witness**	Date
_____	_____
Printed of witness**	Time
_____	_____
Signature of person obtaining consent	Date
_____	_____
Printed name of person obtaining consent	Time

******Use when participant has had this consent form read to them (i.e., illiterate, legally blind, translated into foreign language).

APPENDIX D

Instructor Initial Design Semi-Structured Interview

Thank you so much for taking time to participate in this Interview. I just wanted to take about 15-30 minutes to talk about creating a desired designing blended learning environment.

Please describe your experiences with using learning technological tools?

Would you please identify your strengths and weaknesses of using learning technological tools?

How would you like to present your information such as using text, pictures, graphs, and real-world examples?

If you teach a blended learning course, what kinds of teaching materials do you need to reach your educational goals?

Do you want me to provide additional resources for students such as tutorials for a case study or presentations by guest speakers?

How will students use the materials and resources to reach your course objectives? Please explain?

Is there anything else you want to share with me regarding the use of technological tools or instructional activities?

APPENDIX E

Instructor Design Improvement Semi-Structured Interview

Thank you so much for taking time to participate in this interview. I just wanted to take about 30 - 45 minutes to talk about designing and implementing a desired blended learning environment.

Were you able to use the instructional materials easily? If not, why?

Were you able to manage class activities easily? If not, why?

Did you face any problem? If so, please describe it?

Do you believe that students have sufficient background such as age, intelligence, and experience to comprehend the instructional materials they used? Please explain?

Were the instructional materials accessible and appropriate for your students' level of understanding? Please explain?

How well did your strategies support active learning and student engagement?

Were you able to engage students in the activities by promoting online discussions, blogs, or so on?

How the effectiveness of the instructional materials were in terms of meeting students' needs?

Did the learning activities help students collaboratively work with classmates? Were they beneficial? Please explain?

What was the effect of the resources, methodologies, and technologies on student learning?

How did the instructional materials contribute meaningful content to the topic under study? How did the materials help you achieve the instructional objective?

How did you support your students?

Were you able to provide enough and informative feedback on students' questions? What kind of feedback did you provide?

Is there anything else you want to share with me regarding your experience of using technological tools or instructional activities?

APPENDIX F

Instructor Experience Evaluation Semi-Structured Interview

Thank you so much for taking time to participate in this Interview. I just wanted to take about 30 - 45 minutes to talk about a desired designing blended learning environment.

What is your general perception of teaching blended learning course?

Were you pleased with the implementation of blended learning environment?

Would you please identify your strengths and weaknesses of teaching a blended learning course?

What do you think about the effectiveness of teaching blended course? Did it meet students' needs?

What do you think of using resources, methodologies, and technologies in blended learning environment?

What was the effect of the resources, methodologies, and technologies on student learning?

What did you expect from teaching a blended learning course? What worked better than expected? What worked worse than expected? What was more challenging expected?

Were your students engaged in deeper learning experience? How do you know?

Do you believe that blended learning course was an effective and efficient approach in terms of encouraging and motivating students to be active knowledge seeker, work collaboratively with their classmates, and invest time for learning? Why?

APPENDIX G

Instructor Intervention Observation

Background

In 1987, Arthur Chickering and Zelda Gamson published "Seven Principles for Good Practice in Undergraduate Education," a summary of 50 years of higher education research that addressed good teaching and learning practices. Their findings, and faculty and institutional evaluation instruments based on the findings, have been widely used to guide and improve college teaching.

While instruments such as the Student Rating of Teaching Effectiveness (SRTE) provide a measure of student satisfaction with a course, the Seven Principles provide a useful framework to evaluate the effectiveness of online teaching and learning. Therefore, this Peer Review Guide adapts the Seven Principles to facilitate the peer review of online courses in both undergraduate and graduate level online courses at Penn State. Each principle is described in detail, including evidence of how a principle may be met. Examples of evidence to look for and resources for additional information are also included.

The Seven Principles

Good practice:

1. Encourages contact between students
2. and faculty;
3. Develops reciprocity and cooperation among students;
4. Encourages active learning;
5. Gives prompt feedback;
6. Emphasizes time on task;
7. Communicates high expectations; and
8. Respects diverse talents and ways of learning.

Chickering, A. & Gamson, Z. (1987). *Seven principles for good practice in undergraduate education*. AAHE Bulletin (39)7.

While, ideally, good practice would suggest that all seven principles would be supported in some way in an online course, variations in course format, size, and faculty teaching experience can make reaching that ideal difficult. Like the SRTE, where achieving an overall score of "7" is rare, it is assumed that a peer reviewer will discover room for improvement when examining a course through the lens of the Seven Principles. This Peer Review Guide provides space for the peer reviewer to note teaching and learning strengths, as well as areas for improvement.

Rev. 28 September 2010 - Ann H. Taylor, Dutton e-Education Institute, College of Earth and Mineral Sciences, The Pennsylvania State University

Principle 1: Good practice encourages contact between students and faculty.	**Feedback for the Instructor**
Frequent and timely student-faculty contact is the most important factor in student motivation and involvement, particularly in a distance education environment. Evidence of faculty concern helps students get through challenging situations and inspires them to persevere. Knowing a few faculty members well enhances students' intellectual commitment and encourages them to think about their own values and future plans. **Examples of evidence to look for:** • A "welcome message" is provided at the beginning of the course that encourages student-to-instructor contact for course-related discussions or concerns. • The instructor encourages and fosters a healthy exchange of ideas and sharing of experiences among course participants. • The instructor initiates contact with, or respond to, students on a regular basis in order to establish a consistent online presence in the course (and prior notice is given to students in the event that the instructor will be unavailable for more than a few days, such as might be the case during professional travel). • A prominent announcement area is used to communicate important up-to-date course information to students, such as reminders of impending assignment due dates, curriculum changes, scheduled absences, etc. • The instructor holds regular office hours, and by appointment, that are mediated by technology (e.g., the telephone, chat areas, Adobe Connect Pro) to accommodate distance students. • Student inquiries are responded in a timely manner. • The instructor provides students with interaction space for study groups, "hall way conversations," etc. **Where to look:** • Discussion forums • E-mail messages • Posted announcements • Course syllabus • Chat space **Resources:** • "What to do when opening a course" - https://www.e-education.psu.edu/facdev/pg3 • "Using online icebreakers to promote student/teacher interaction" - http://www.southalabama.edu/oll/jobaidsfall03/Icebreakers%20Online/icebreakerjobaid.htm	**Evidence Found:** **Strengths:** **Areas for Improvement:**

Principle 2: Good practice develops reciprocity and cooperation among students.	**Feedback for the Instructor**

Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one's own ideas and responding to others' reactions sharpens thinking and deepens understanding.
 	
Examples of evidence to look for:
• Regular opportunities for students to engage in one or more of the following activities:
  ○ Formal and/or informal discussions of course topics
  ○ Collaborative course assignments
  ○ Study groups
• A "meet one another" activity at the beginning of the course so students can begin to make personal connections.
• Encouragement to students to strengthen their online presence in the course by sharing links to their e-portfolio, personal Web site, and/or posting a photo of themselves to the class Web space (e.g., their ANGEL profile).
• Group assignments that follow the basic tenants of cooperative learning (see Resources, below) in order to avoid the common pitfalls of "group work."
• An explanation of the criteria for "good" discussion participation.
• Modeling of good discussion participation practices by the instructor.
• Discussion prompts that help to guide and elicit student participation in class discussion activities.
• Instructor *facilitation* of class discussions by encouraging, probing, questioning, summarizing, etc.
• Student interaction space(s) for study groups, "hall way conversations," etc.
 	
Where to look:
• Instructional materials / Assignment directions
• Discussion forums
• E-mail messages
• Course syllabus
• Chat space
 	
Resources:
• "An Overview of Cooperative Learning" - http://www.co-operation.org/pages/overviewpaper.html
• "Strategies to Promote Online Discussion" - http://members.shaw.ca/mdde615/howcommunicate.htm
• "Ice-breakers" - http://www.ion.uillinois.edu/resources/pointerscli ckers/2002_01/index.asp
 	
"Leading and Facilitating Discussion" - http://www.princeton.edu/~aiteachs/handbook/facilitating.html
	Evidence Found:
	
	Strengths:
	
	Areas for Improvement:

Principle 3: Good practice encourages active learning.	**Feedback for the Instructor**

Active learning methods engage students in the learning process by encouraging them to discover, process, and apply information. Empirical support for the positive impact of active learning on student achievement is extensive.
 	
Examples of evidence to look for:
• Student activities that involve one or more of the following:
  ○ Active use of writing, speaking, and other forms of self-expression
  ○ Opportunity for information gathering, synthesis, and analysis in solving problems (including the use of library, electronic/computer and other resources, and quantitative reasoning and interpretation, as applicable)
  ○ Engagement in collaborative learning activities
  ○ Application of intercultural and international competence
  ○ Dialogue pertaining to social behavior, community, and scholarly conduct
  ○ For General Education courses, three or more of these activities are integrated into courses offered in the knowledge domains (http://www.psu.edu/ufs/geic/framewrk.html):
• Opportunities for students to "customize" their learning by tailoring assignments to their personal and professional interests and needs.
• Examples of student work where they
  ○ Think, talk, or write about their learning
  ○ Reflect, relate, organize, apply, synthesize, or evaluate information
  ○ Perform research, lab or studio work, or physical activities
  ○ Participate in, design, or develop educational games and simulations.
 	
Where to look:
• Course syllabus
• Instructional materials
• Assignment dropboxes
• e-Portfolios
• Discussion forums
 	
Resources:
• Active Learning (Illinois State University) - http://www.cat.ilstu.edu/additional/tips/newActive.php
• "How Can Teachers Promote Learning and Thinking?" - http://www.pgcps.pg.k12.md.us/~elc/theory9.html
• "Inquiry-based Learning" - http://www.schreyerinstitute.psu.edu/pdf/IBL.pdf
	Evidence Found:
	
	Strengths:
	
	Areas for Improvement:

Principle 4: Good practice gives prompt feedback.	**Feedback for the Instructor**
Instructors help students frequently assess their knowledge and competence and provide them with opportunities to perform, receive meaningful suggestions, and reflect on their learning. **Examples of evidence to look for:** • Information about course feedback methods and standards on the course syllabus. • Option (or requirement) for students to submit drafts of assignments for instructor feedback. • Meaningful feedback on student assignments that is provided within a publicized, and reasonable, time frame. • Assignment feedback that is clear, positive, specific, and focused on observable behavior that can be changed. • Clearly communicated course and individual assignment grading criteria. • Up-to-date, student-accessible course gradebook. • An open discussion forum where students can ask questions, and receive instructor feedback, about course content and activities. • Student surveys that provide the instructor with feedback for course improvement. • Examples of student work that demonstrate advancement toward learning goals. **Where to look:** • Course syllabus • Instructional materials / Assignment directions • Assignment dropboxes and e-portfolios • Course gradebook • Discussion forums • Survey instruments **Resources:** • TLT Ideas for Giving Prompt, Better Feedback to Students - http://www.tltgroup.org/SEVEN/4_Feedback.htm • Providing Feedback - http://www.netc.org/focus/strategies/prov.php • Collecting Feedback That Improves Teaching and Learning - http://www.schreyerinstitute.psu.edu/Tools/MidsemesterFeedback	**Evidence Found:** **Strengths:** **Areas for Improvement:**

Principle 5: Good education emphasizes time on task.	**Feedback for the Instructor**
The frequency and duration of study, as well as effective time management skills, are critical for students and professionals alike. Students need help in learning to manage and prioritize their study time. **Examples of evidence to look for:** • A published course schedule that outlines topics to be covered and assignment due dates so students can plan their workload accordingly. • Information on the course syllabus that provides an estimate of the amount of time students should spend on the course (e.g., “”On average, most students spend eight hours per week working on course assignments. Your workload may be more or less depending on your prior experience with computing and the Web in general, and with this subject in particular.”) • Time-to-completion information on course assignments (e.g., “This assignment should take you approximately 2 hours to complete.”) • Course-specific study tips that provide students with strategies for utilizing their time well. • Assignment feedback that provides students with information on where to focus their studies. • Assignment due dates and timeframes that take into account the nature of the target audience. For example, a course targeted to working adult professionals might incorporate a weekend into an assignment timeframe. • Course statistics that demonstrate that time-to-completion and weekly time-on-task estimates are on target. **Where to look:** • Course syllabus • Instructional materials / Assignment directions • Assignment dropboxes and e-portfolios • “Report” tab in ANGEL **Resources:** • Emphasize Time on Task (Ohio Learning Network) - http://www.oln.org/ILT/7_principles/time.php • iStudy Module (for students) on Time Management: http://istudy.psu.edu/modules.html	**Evidence Found:** **Strengths:** **Areas for Improvement:**

Principle 6: Good practice communicates high expectations.	**Feedback for the Instructor**
As the saying goes, "if you don't know where you are going, how will you know when you get there?" Effective instructors have high, but reasonable, expectations for their students. They clearly communicate those expectations and provide support to their students in their efforts to meet those expectations. **Examples of evidence to look for:** • Explicit communication of the skills and knowledge every student needs to have in order to be successful in the course. • Explanation of course learning goals and how assignments are designed to help students achieve those goals. • Frequent feedback provided to students through written explanations and detailed feedback on assignments. • Motivation and encouragement that inspires students to move past the easy answers to more complex solutions. • Routine use of critical and probing questions when communicating with students about course assignments and activities. • Examples and non-examples of high quality work, along with a discussion of the differences between these. • Examples of student work that demonstrate advancement toward learning goals. **Where to look:** • Course syllabus • Instructional materials / Assignment directions • Assignment dropboxes and e-portfolios **Resources:** • "Student Learning Goals and Outcomes" - http://www.schreyerinstitute.psu.edu/pdf/DevelopingStudentLearningOutcomes.pdf • "Checklist for a Course Assignment and Associate Grading Criteria" - http://www.schreyerinstitute.psu.edu/pdf/assignments_grading_checklist.pdf	**Evidence Found:** **Strengths:** **Areas for Improvement:**

Principle 7: Good practice respects diverse talents and ways of learning.	**Feedback for the Instructor**
People bring different talents and styles of learning to the learning environment. Some bring a wealth of relevant experience to a course, while others may new to the topic at hand. Likewise, students who are strong in a discussion situation may be less adept at lab or studio work. Students need the opportunity to demonstrate their talents and to "personalize" their learning so that it is relevant to them. It is also important to give students opportunities to learn in ways that may be less comfortable in order to improve their learning skills. **Examples of evidence to look for:** • Use of a variety of assessment tools that gauge student progress. • Alternative assignment options that allow students to demonstrate their progress in a manner that is best conducive to their talents. For example, a podcast might be allowed as learning evidence instead of a written paper. • Supplemental online materials are provided to students who lack prerequisite knowledge or who would benefit from having content presented in an alternative manner. • Timely, corrective feedback for online activities. • A positive online climate where students are encouraged to seek assistance with course content and learning activities if needed. • A policy for accommodations that is stated on the course syllabus. • Accommodations are proactively offered for students with disabilities. **Where to look:** • Course syllabus • Instructional materials / Assignment directions • Assignment dropboxes and e-portfolios • Discussion forums **Resources:** • "Learning effectively by understanding your learning preferences" – http://www.mindtools.com/mnemlsty.html • "Classroom assessment techniques" - http://www.ntlf.com/html/lib/bib/assess.htm • Accessibility in course design forum on PSU Learning Design Community Hub - http://ets.tlt.psu.edu/learningdesign/forum/4 • Office of Disability Services Faculty Handbook – http://www.equity.psu.edu/ods/faculty/overview.asp	**Evidence Found:** **Strengths:** **Areas for Improvement:**

APPENDIX H

Initial Course Interest Survey

There are 34 statements in this survey. Please think about each statement in relation to the class you have just taken and indicate how true it is. Give the answer that truly applies to you, and not what you would like to be true, or what you think others want to hear.

Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.

Circle your responses on this survey sheet by using following values to indicate your response to each item.

1. The instructor knows how to make us feel enthusiastic about the subject matter of this course.

Not true Slightly true Moderately true Mostly true Very true

2. The things I am learning in this course will be useful to me.

Not true Slightly true Moderately true Mostly true Very true

3. I feel confident that I will do well in this course.

Not true Slightly true Moderately true Mostly true Very true

4. This class has very little in it that captures my attention.

Not true Slightly true Moderately true Mostly true Very true

5. The instructor makes the subject matter of this course seem important.

Not true Slightly true Moderately true Mostly true Very true

6. You have to be lucky to get good grades in this course.

Not true Slightly true Moderately true Mostly true Very true

7. I have to work too hard to succeed in this course.

Not true Slightly true Moderately true Mostly true Very true

8. I do NOT see how the content of this course relates to anything I already know.

Not true Slightly true Moderately true Mostly true Very true

9. Whether or not I succeed in this course is up to me.

Not true Slightly true Moderately true Mostly true Very true

10. The instructor creates suspense when building up to a point.

Not true Slightly true Moderately true Mostly true Very true

11. The subject matter of this course is just too difficult for me.

Not true Slightly true Moderately true Mostly true Very true

12. I feel that this course gives me a lot of satisfaction.

Not true Slightly true Moderately true Mostly true Very true

13. In this class, I try to set and achieve high standards of excellence.

Not true Slightly true Moderately true Mostly true Very true

14. I feel that the grades or other recognition I receive are fair compared to other students.

Not true Slightly true Moderately true Mostly true Very true

15. As a student in this class, I am curious about the subject matter.

Not true Slightly true Moderately true Mostly true Very true

16. I enjoy working in this course.

Not true Slightly true Moderately true Mostly true Very true

17. It is difficult to predict what grade the instructor will give my assignments.

Not true Slightly true Moderately true Mostly true Very true

18. I am pleased with the instructor's evaluations of my work compared to how well I think I have done.

Not true Slightly true Moderately true Mostly true Very true

19. I feel satisfied with what I am getting from this course.

Not true Slightly true Moderately true Mostly true Very true

20. The content of this course relates to my expectations and goals.

Not true Slightly true Moderately true Mostly true Very true

21. The instructor does unusual or surprising things that are interesting.

Not true Slightly true Moderately true Mostly true Very true

22. The students actively participate in this class.

Not true Slightly true Moderately true Mostly true Very true

23. To accomplish my goals, it is important that I do well in this course.

Not true Slightly true Moderately true Mostly true Very true

24. The instructor uses an interesting variety of teaching techniques.

Not true Slightly true Moderately true Mostly true Very true

25. I do NOT think I will benefit much from this course.

Not true Slightly true Moderately true Mostly true Very true

26. I often daydream while in this class.

Not true Slightly true Moderately true Mostly true Very true

27. As I am taking this class, I believe that I can succeed if I try hard enough.

Not true Slightly true Moderately true Mostly true Very true

28. The personal benefits of this course are clear to me.

Not true Slightly true Moderately true Mostly true Very true

29. My curiosity is often stimulated by the questions asked or the problems given on the subject matter in this class.

Not true Slightly true Moderately true Mostly true Very true

30. I find the challenge level in this course to be about right: neither too easy not too hard.

Not true Slightly true Moderately true Mostly true Very true

31. I feel rather disappointed with this course.

Not true Slightly true Moderately true Mostly true Very true

32. I feel that I get enough recognition of my work in this course by means of grades, comments, or other feedback.

Not true Slightly true Moderately true Mostly true Very true

33. The amount of work I have to do is appropriate for this type of course.

Not true Slightly true Moderately true Mostly true Very true

34. I get enough feedback to know how well I am doing.

Not true Slightly true Moderately true Mostly true Very true

APPENDIX I

Latter Course Interest Survey

There are 34 statements in this questioner. Please think about each statement in relation to the class you have just taken and indicate how true it is. Give the answer that truly applies to you, and not what you would like to be true, or what you think others want to hear.

Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.

Circle your responses on this survey sheet by using following values to indicate your response to each item.

1. The instructor knew how to make us feel enthusiastic about the subject matter of this course.

Not true Slightly true Moderately true Mostly true Very true

2. The things I learned in this course will be useful to me.

Not true Slightly true Moderately true Mostly true Very true

3. I feel confident that I did well in this course.

Not true Slightly true Moderately true Mostly true Very true

4. This class had very little in it that captures my attention.

Not true Slightly true Moderately true Mostly true Very true

5. The instructor made the subject matter of this course seem important.

Not true Slightly true Moderately true Mostly true Very true

6. You have to be lucky to get good grades in this course.

Not true Slightly true Moderately true Mostly true Very true

7. I had to work too hard to succeed in this course.

Not true Slightly true Moderately true Mostly true Very true

8. I did NOT see how the content of this course relates to anything I already know.

Not true Slightly true Moderately true Mostly true Very true

9. Whether or not I succeed in this course was up to me.

Not true Slightly true Moderately true Mostly true Very true

10. The instructor created suspense when building up to a point.

Not true Slightly true Moderately true Mostly true Very true

11. The subject matter of this course was just too difficult for me.

Not true Slightly true Moderately true Mostly true Very true

12. I feel that this course gave me a lot of satisfaction.

Not true Slightly true Moderately true Mostly true Very true

13. In this class, I tried to set and achieve high standards of excellence.

Not true Slightly true Moderately true Mostly true Very true

14. I feel that the grades or other recognition I received were fair compared to other students.

Not true Slightly true Moderately true Mostly true Very true

15. As a student in this class, I was curious about the subject matter.

Not true Slightly true Moderately true Mostly true Very true

16. I enjoyed working in this course.

Not true Slightly true Moderately true Mostly true Very true

17. It was difficult to predict what grade the instructor has given my assignments.

Not true Slightly true Moderately true Mostly true Very true

18. I am pleased with the instructor's evaluations of my work compared to how well I thought I did.

Not true Slightly true Moderately true Mostly true Very true

19. I feel satisfied with what I got from this course.

Not true Slightly true Moderately true Mostly true Very true

20. The content of this course related to my expectations and goals.

Not true Slightly true Moderately true Mostly true Very true

21. The instructor did unusual or surprising things that were interesting.

Not true Slightly true Moderately true Mostly true Very true

22. The students actively participated in this class.

Not true Slightly true Moderately true Mostly true Very true

23. To accomplish my goals, it was important that I did well in this course.

Not true Slightly true Moderately true Mostly true Very true

24. The instructor used an interesting variety of teaching techniques.

Not true Slightly true Moderately true Mostly true Very true

25. I do NOT think I will benefit much from this course.

Not true Slightly true Moderately true Mostly true Very true

26. I often daydreamed while in this class.

Not true Slightly true Moderately true Mostly true Very true

27. As I was taking this class, I believed that I can succeed if I try hard enough.

Not true Slightly true Moderately true Mostly true Very true

28. The personal benefits of this course were clear to me.

Not true Slightly true Moderately true Mostly true Very true

29. My curiosity was often stimulated by the questions asked or the problems given on the subject matter in this class.

Not true Slightly true Moderately true Mostly true Very true

30. I found the challenge level in this course to be about right: neither too easy not too hard.

Not true Slightly true Moderately true Mostly true Very true

31 .I felt rather disappointed with this course.

Not true Slightly true Moderately true Mostly true Very true

32. I feel that I got enough recognition of my work in this course by means of grades, comments, or other feedback.

Not true Slightly true Moderately true Mostly true Very true

33. The amount of work I had to do was appropriate for this type of course.

Not true Slightly true Moderately true Mostly true Very true

34. I got enough feedback to know how well I was doing.

Not true Slightly true Moderately true Mostly true Very true

APPENDIX J

Instructional Materials Motivation Survey

There are 36 statements in this questionnaire. Please think about each statement in relation to the instructional materials you have just studied, and indicate how true it is. Give the answer that truly applies to you, and not what you would like to be true, or what you think others want to hear.

Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.

Circle your responses on this survey sheet by using following values to indicate your response to each item.

1. When I first looked at this lesson, I had the impression that it would be easy for me.

Not true Slightly true Moderately true Mostly true Very true

2. There was something interesting at the beginning of this lesson that got my attention.

Not true Slightly true Moderately true Mostly true Very true

3. This material was more difficult to understand than I would like for it to be.

Not true Slightly true Moderately true Mostly true Very true

4. After reading the introductory information, I felt confident that I knew what I was supposed to learn from this lesson.

Not true Slightly true Moderately true Mostly true Very true

5. Completing the exercises in this lesson gave me a satisfying feeling of accomplishment.

Not true Slightly true Moderately true Mostly true Very true

6. It is clear to me how the content of this material is related to things I already know.

Not true Slightly true Moderately true Mostly true Very true

7. Many of the pages had so much information that it was hard to pick out and remember the important points.

Not true Slightly true Moderately true Mostly true Very true

8. These materials are eye-catching.

Not true Slightly true Moderately true Mostly true Very true

9. There were stories, pictures, or examples that showed me how this material could be important to some people.

Not true Slightly true Moderately true Mostly true Very true

10. Completing this lesson successfully was important to me.

Not true Slightly true Moderately true Mostly true Very true

11. The quality of the writing helped to hold my attention.

Not true Slightly true Moderately true Mostly true Very true

12. This lesson is so abstract that it was hard to keep my attention on it.

Not true Slightly true Moderately true Mostly true Very true

13. As I worked on this lesson, I was confident that I could learn the content.

Not true Slightly true Moderately true Mostly true Very true

14. I enjoyed this lesson so much that I would like to know more about this topic.

Not true Slightly true Moderately true Mostly true Very true

15. The pages of this lesson look dry and unappealing.

Not true Slightly true Moderately true Mostly true Very true

16. The content of this material is relevant to my interests.

Not true Slightly true Moderately true Mostly true Very true

17. The way the information is arranged on the pages helped keep my attention.

Not true Slightly true Moderately true Mostly true Very true

18. There are explanations or examples of how people use the knowledge in this lesson.

Not true Slightly true Moderately true Mostly true Very true

19. The exercises in this lesson were too difficult.

Not true Slightly true Moderately true Mostly true Very true

20. This lesson has things that stimulated my curiosity.

Not true Slightly true Moderately true Mostly true Very true

21. I really enjoyed studying this lesson.

Not true Slightly true Moderately true Mostly true Very true

22. The amount of repetition in this lesson caused me to get bored sometimes.

Not true Slightly true Moderately true Mostly true Very true

23. The content and style of writing in this lesson convey the impression that its content is worth knowing.

Not true Slightly true Moderately true Mostly true Very true

24. I learned some things that were surprising or unexpected.

Not true Slightly true Moderately true Mostly true Very true

25. After working on this lesson for awhile, I was confident that I would be able to pass a test on it.

Not true Slightly true Moderately true Mostly true Very true

26. This lesson was not relevant to my needs because I already knew most of it.

Not true Slightly true Moderately true Mostly true Very true

27. The wording of feedback after the exercises, or of other comments in this lesson, helped me feel rewarded for my effort.

Not true Slightly true Moderately true Mostly true Very true

28. The variety of reading passages, exercises, illustrations, etc., helped keep my attention on the lesson.

Not true Slightly true Moderately true Mostly true Very true

29. The style of writing is boring.

Not true Slightly true Moderately true Mostly true Very true

30. I could relate the content of this lesson to things I have seen, done, or thought about in my own life.

Not true Slightly true Moderately true Mostly true Very true

31. There are so many words on each page that it is irritating.

Not true Slightly true Moderately true Mostly true Very true

32. It felt good to successfully complete this lesson.

Not true Slightly true Moderately true Mostly true Very true

33. The content of this lesson will be useful to me.

Not true Slightly true Moderately true Mostly true Very true

34. I could not really understand quite a bit of the material in this lesson.

Not true Slightly true Moderately true Mostly true Very true

35. The good organization of the content helped me be confident that I would learn this material.

Not true Slightly true Moderately true Mostly true Very true

36. It was a pleasure to work on such a well-designed lesson.

Not true Slightly true Moderately true Mostly true Very true

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ABSTRACT

MOVING TOWARD BLENDED LEARNING: A MULTIPLE CASE DESIGN BASED RESEARCH STUDY IN HIGHER EDUCATION

by

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The purpose of this multiple case design-based research study was to determine what elements were needed to assist two higher education instructors inexperienced in designing and teaching a blended learning course to successfully create and implement it, to document the instructors' perceptions about their first experience of teaching a blended learning course, and to reveal how this blended learning course influenced student satisfaction. The goal of the study was to iteratively design, develop, implement, evaluate and redesign a desired blended learning course based on constructivist design theory, cognitive learning theory, and ARCS motivational design theory over the three iterative phases.

This design-based research approach used a mixed study of quantitative and qualitative research methods including student surveys, instructor interviews, learning environment and observations. Quantitative data in terms of determining any change in the level of students' motivation between the beginning of the semester and the end of the semester, and students' motivational attitude toward the use of instructional activities and tools at the fifth and tenth week of the semester was collected. Multiple choice comprehensive pretest and posttest surveys were given to students to detect changes in their motivation level, and a multiple choice comprehensive

survey was given to students to detect their motivational attitude. Qualitative data in terms of identifying the need of appropriate technological processes and resources to create a desired blended learning course, enhancing the effectiveness and efficiency of the blended learning course, and revealing instructor perceptions about teaching a blended learning course was collected over the three iterative designed intervention phases. Instructor perceptions were captured through in-depth interviews, and the strengths and weaknesses of the blended learning environment were ascertained through observations.

The results of this study demonstrated Blackboard Learn (Learning Management System) and Google Documents were two beneficial learning resources to create a desired blended learning environment. The design and implementation of these learning resources enabled the instructors to shift from a passive teaching style to an active teaching style. Students became active and interactive learners through the adoption of active learning approaches and transactional collaborative learning approaches in the designed blended learning environments. Through the process of three iterative design cycles, the blended learning environments were modified to optimize the efficiency and effectiveness of learning activities and maximize the quality of learning and teaching experiences. The results also revealed that the instructors' overall perception was positive toward taking part in combining online and face-to-face learning and they were satisfied with teaching a blended learning course. Lastly, findings from the paired t-test completed in SPSS which compared the students' motivation level in the beginning of the semester and the end of the semester were not statistically significant in both cases.

AUTOBIOGRAPHICAL STATEMENT

Ahmet Berk Ustun has been a professional in instructional technology for 9 years. He currently works as a graduate research assistant in the Learning Design and Technology program at Wayne State University, Detroit, MI. He earned his PhD in Learning Design and Technology at Wayne State University, Detroit, Michigan. He received his Master's in Computer Education and Instructional Technology at Gazi University, Ankara, Turkey. He also obtained his Bachelor degree in Computer Education and Instructional Technology at Selcuk University, Konya, Turkey. His professional work began with serving in the educational services as a teacher for elementary and middle schools after getting into the top 0,1% of examination ranking from a nationwide examination to be a teacher. He is also certified in Online Teaching and College and University Teaching by obtaining the Graduate Certificates from Wayne State University, Detroit, Michigan.

Ahmet is an active researcher and has presented scholarly research at several local and international professional seminars, conferences and workshops. His research interests are in the design of effective and efficient online and blended learning environments and his research focuses also on e-learning, mobile learning, emerging learning technology and MOOCs.