Eastern Michigan University
DigitalCommons@EMU

Master's Theses and Doctoral Dissertations

Master's Theses, and Doctoral Dissertations, and Graduate Capstone Projects

2010

The examination of the implementation of blended learning instruction on the teaching and learning environment in two west Michigan school districts

Richard Mark Vandermolen

Follow this and additional works at: http://commons.emich.edu/theses

Part of the Educational Methods Commons

THE EXAMINATION OF THE IMPLEMENTATION OF BLENDED LEARNING

INSTRUCTION ON THE TEACHING AND LEARNING ENVIRONMENT IN

TWO WEST MICHIGAN SCHOOL DISTRICTS

by

Richard Mark Vandermolen

Dissertation

Submitted to the Department of Leadership and Counseling

Eastern Michigan University

in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

Dissertation Committee:

Ronald Williamson, Ed.D., Chair

James Berry, Ed.D.

Barbara Bleyaert, Ed.D.

Byron Bond, Ph.D.

November, 2010

Ypsilanti, Michigan

THE EXAMINATION OF THE IMPLEMENTATION OF BLENDED LEARNING
INSTRUCTION ON THE TEACHING AND LEARNING ENVIRONMENT IN TWO
WEST MICHIGAN SCHOOL DISTRICTS

by

Richard Mark Vandermolen

APPROVED:

_____   _____
Ronald Williamson, Ed.D.   Date
Dissertation Chair

_____   _____
James Berry, Ed.D.   Date
Committee Member

_____   _____
Barbara Bleyaert, Ed.D.   Date
Committee Member

_____   _____
Byron Bond, Ph.D.   Date
Graduate School Representative

_____   _____
Jaclynn Tracy, Ph.D.   Date
Department Head

_____   _____
Deborah de Laski-Smith, Ph.D.   Date

Interim Dean of the Graduate School

DEDICATION

     This dissertation is dedicated to my wife, Elizabeth, and my two sons, Ethan and James. They have been there for me and exhibited the true nature of what family does for each other. I love you three dearly. I also thank my God for strength, perseverance, patience, and a fraction of His wisdom to help me with this process.

ACKNOWLEDGEMENTS

ABSTRACT

Blended learning instruction is emerging as one of the most promising instructional practices in educational settings. Blended learning instruction combines two learning environments: traditional face-to-face instruction and online instruction.

Most research concerning blended instruction has been conducted at the post-secondary level. This study was conducted at the high school level and examined the implementation of blended instruction in a high school setting. It explored and considered the perspective of teachers and students as they experienced the blended environment for the first time. The study was conducted at two comprehensive high schools in West Michigan. The study collected qualitative data by using multiple data points. The data came from focused interviews with teachers, teacher narrative writing statements, student surveys, online course interaction, direct observation, and the grade distribution of students enrolled in the blended courses. The data were collected over two trimesters during the 2009-2010 academic school year.

The results of this study indicated several important findings that should be considered while implementing the blended instructional model at the high school level. Results showed that it was critical for each high school to have a vision and purpose for adopting the blended approach. This had important implications for the type of blending each school would adopt and practice. Interaction between students and teachers was different than students experienced in the traditional face-to-face classroom setting.

Teachers were able to provide more individualized instruction, and students felt that their peers should have an opportunity to learn in a blended setting. Yet it was critical that teachers were adequately prepared for the rigors of teaching that were different in the blended setting. Significant time and training were needed prior to implementation of blended instruction. Results also indicated that teachers needed support after initial training to reflect and deal with the different working conditions they faced in the blended classroom setting.

While blended instruction has the potential to fundamentally redraw the instructional setting of future high school classrooms, it remains critically important that blended teachers' instructional strategies and lesson designs are the foundation for engaging students in meaningful and relevant learning experiences.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION AND BACKGROUND

The term *global economy* has been written and discussed many times since the

dawn of the new millennium. In the new global economy, each country has access to new

technological tools to access knowledge. Knowledge is the new commodity in the global

economy (Marx, 2006). Friedman (2005) coined the recent phrase *the world is flat* to

describe this phenomenon. The flattening of the world means that knowledge has become

accessible to virtually every member of the global economy (Wagner, 2008). Flattening

has opened up economies to the world that were never accessible before (Friedman,

2005), producing greater competition among all members of the global economy for their

share of the proverbial economic pie. In his book, *Sixteen Trends*, Marx (2006) stated this

in another way, by indicating that the future of any economy is its ability to grow the

social and intellectual capital. In terms of education, this means that students must

engage in activities that require critical and creative thinking strategies, use and apply

technological tools, and develop tolerance of those who are different from themselves

(Marx, 2006). Educational systems must remain connected to their environments to

maintain the legitimacy they seek and the customers they serve, but the pace at which

western society moves can sometimes be staggering to the participant and amazing to the

observer. We are often so busy that there is little time to contemplate the present and

think about the future (Marx, 2006). We tend to "defend old ways because we haven't

taken the time to consider that accelerating trends are creating new expectations" (p. 325).

Marx (2006) believes that remaining cognizant of the societal forces that shape the future is critical. He wrote about sixteen trends that will shape the future, calling them *seismic shifts*. Many of these trends are currently on their way to making their mark on western society. Authors like Friedman (2005) and Marx (2006) agreed that today's students must compete for jobs with greater numbers of well-educated young people from all parts of the globe (Wagner, 2008). Wagner further stated that technology has "enabled a growing number of routine jobs–blue and white collar– to be off-shored or automated" (p. xxvi). Public educational institutions will need to rethink what type of education is required to help students get and keep jobs in the future (Wagner, 2008). Schools ought to embrace these trends for reform, or the institutions will decline in their outdated approach to the work of their technical core (Achieve, 2005).

Many reports have targeted American high schools; the most recent critically analyses how the current design in high schools across the country no longer serves the needs of its students (Wagner, 2008). According to Larson (2009), education in the United States has remained relatively static over the last 100 years. Technology has become common place in most high schools, yet the instruction has not been changed. With some exceptions, most schools have remained organized around an industrial model where leaders work within a hierarchical framework (Larson, 2009)

In the early 20th century, the transformation of the American high school was influenced by a strand of progressivism called Scientific Management (Marantz-Cohen, 2001). Business and industry began to have a substantial impact on schools. High schools

were influenced by the corporate models of efficiency and accountability and began to take on the current hierarchical structure they preserve today (Marantz-Cohen, 2001). Central office and building level administration replaced informal governance systems, and teachers became much like the factory worker who worked directly with the raw product (Senge, 2000). Teachers did not have much influence or say about how or what would be taught in school (2000). Administration set standards for performance and required teachers to follow strict rules for pedagogy and content of courses (Marantz-Cohen, 2001). Objective measurements such as standardized tests were adapted to sort and label students. Just as the factory workers rallied for their rights, teachers also responded to the new controls by forming their own union in 1916 to actively advance their cause and their power (Marantz-Cohen, 2001, p. 24).

Senge (2000) described the industrial age of schools as machine-age thinking. Twentieth century educators borrowed this industrial age approach to design schools to resemble the industrial age assembly line. The schools were organized in distinct stages (2000). Grades separated students by age, set numbers of students per classroom, and specific minutes-per-class-per-subject area supported the industrial age approach to schooling (Senge, 1990). Unfortunately, this approach to learning assumed all students learned the same way and that they could keep pace with the speed of the learning treadmill (Senge, 2000).

The standards and measures of control, which originated with the scientific management reform movement, remain the current operating standard in many schools today (Wagner, 2008). Reformists contend that this is a crisis that demands a response (Elmore, 2007). High schools today were not designed to meet the economic imperatives

of a knowledge-based economy (Wise, 2008). The current formal education prepares students for a world of the past (Gardner, 2008). Meshing global and societal trends with school reform efforts could prove to be a daunting task.

Many high schools across the country have begun the process of reform based on the findings and recommendations in a publication of the National Association of Secondary School Principals (NASSP, 2004) entitled *Breaking Ranks II. (*Some consider this document a template for improving high schools.) The essential elements and findings of this document hold that the most successful high schools stress the importance of the new three R's: relationships, relevance, and rigor. According to the Association of Supervision and Curriculum Development (ASCD), personalization of the learning environment is one strategy that suggests that schools connect with their students so that weaknesses, strengths, prior experiences, and knowledge are known to the staff (ASCD, 2007). Personalizing learning through methods such as advisories, individualized learning plans, mentoring, and differentiated instruction engage students in their learning because students know that their teachers care about their success and learning (Educational Research Service, 2008). "Personalized learning also recognizes the intellectual capacity and interests of students and the students' involvement in their academic decisions" (p. 2).

As important as relationships can be for the success of each child in high school, the present age learner must also have equal doses of relevance for learning (NASSP, 2004). To engage learners in the classroom, it is necessary to understand these new learners, and the needs of the learners today are very different from those just a decade ago (Thornburg, 1992). The *Net Generation* learner is characterized as a digital learner

who is connected, needs immediate feedback, and has the desire for an experiential learning setting. The students prefer team settings for learning in which the learning is accomplished by engagement through kinesthetic and visual modalities (Oblinger, 2005).

Oblinger (2003) described the information age mindset as "a way to indicate how the technological trends influence student learning" (p. 40). She indicated that for students, multi-tasking is a way of life. Listening to an iPod, sending instant messages, doing homework, and talking on a cell phone is a student's response to information overload. An article by *eSchoolNews* in December 2008, cited a report completed by the Info Savvy Group that stated, "Digital native learners prefer acquiring knowledge quickly from multiple sources, multitasking and parallel processing" (p. 2). They also prefer to process pictures, sound, and video before text and have a preference to interact and network simultaneously with many others (Stansbury, 2008). Computers and the internet have been identified as the decisive force that has defined the generation known as Millennial – those who were born between 1980 and 2000 (Coates, 2007, Dede, 2004). The North American Council for Online Learning (2008) reported that 87% of all youth between the ages of twelve and seventeen – 21 million people – use the internet. The Center for Digital Education (2007) described the disconnect between the millennial learner and the industrial age high school in the following statement:

> Technology is slowly being introduced into education. While businesses have changed significantly, education in the United States remains much as it has been for two centuries. However, rote memory exercises in an age of Google, outdated textbooks in a time of instant information and single-media learning environments in a world of multi-media, simply are not connecting with the nation's students.

The students our schools are endeavoring to teach and prepare for the future are

learning and interacting with each other in technology rich environments. For the

Millennials, a term used to describe the generation born in the 1980s and 1990s,

cell phones, text messages and instant messages are their chosen communication

methods. Computer gaming has evolved from casual entertainment to a social

event, complete with national and international competitions. (p. 2)

A paradigm shift is needed to alter the education, training, and preparation of the

current generation of learners (Oblinger, 2005). Printed books and structured classrooms

can no longer be the primary means for preparing our students for the 21st century

(Center for Digital Education, 2007). Creating classrooms that are preparing students

with 21st century learning skills requires re-equipping classrooms and teachers with the

necessary technology to make learning relevant to the learning styles of the students. In

response, Michigan developed *Education Yes* and then the new high school *Michigan*

Merit Curriculum (Michigan Department of Education, 2008). In many Michigan school

districts, the response has been to review the research that indicates the differences in

learners today and those in the past (Oblinger, 2003). One response by school districts

has been to generate and implement an online learning environment that complements the

traditional learning setting (Ed Week Staff, 2008). For students to obtain a real-world

rigorous and relevant education, they need to explore the concepts behind the up-and-

coming technologies (Oblinger, 2005). Other reasons for the cultivation of the online

learning environment include the ability to expand course offerings, provide advanced

placement, credit recovery, and individualized instruction, and resolve student schedule

conflicts (NASSP, 2004).

Michigan, the first state in the United States to require online learning as part of the high school graduation requirements, has gained notoriety for its leadership in the area of online learning (Michigan Association of Secondary School Principals, 2008). Although online course delivery models have been used for adult learners for nearly a decade or more in the college setting, it is still a relatively new phenomenon in the public high school setting (Clark, 2008). The North American Council for Online Learning's report entitled *Keeping Pace with K-12 Online Learning* finds that online learning continued to grow in 2007 and 2008, with new programs and the enhancement of existing programs (Devaney, 2008).

In the design of the online learning environment, the primary philosophy for design that has emerged is a constructivist approach (Mishra, 2008). In this approach, the online course incorporates discussion forums (synchronous and asynchronous), email between students, and student collaboration on group projects (Mishra, 2002). In addition, if the course had been designed from constructivist principles, one would observe students participating in relevant, interactive projects based on collaborative activities (Bonk, 2006). This approach allows the learners to be self-directed and have some control over their learning. However, Bonk found that few teachers actually designed online courses according to these principles despite students' desire to have these activities in the online learning environment. Bonk concluded that there was a significant gap between preferred and actual online instructional practices.

Emerging as the next generation of online learning environment is the blended or hybrid course (Bonk, 2006). Blended learning is the convergence of online and face-to-face education. The blended approach combines the best elements of the two approaches

and is likely to emerge as the leading model of the future of online education (NACOL, 2008).

Statement of the Problem

If classroom instruction is not engaging learners, then they are not learning (Pierce, 2009). Educators have grappled with that concept for decades. Now the convergence of the global economy and information and technology has produced an environment in which the medium for instruction could change (Wagner, 2008). The Internet brought a *scalable method* to design the learning environment that allows for students to take more responsibility and ownership of their learning (Picciano & Dziuban, 2007). Teachers can become pullers and directors, instead of pushers and producers of content knowledge (Pierce, 2009).

The instructional approach that a teacher uses directly impacts learning (Anderson, 2009). Understanding how the Internet, technological tools, and flexible scheduling can change a teacher's instructional approach to make learning more meaningful and relevant is critical because it helps the educator understand how a new paradigm for teaching and learning ought to look in the 21st century. The difficulty of this shift and change requires that we do not look for the perfect composite of a leader, but rather a team that exhibits leadership traits and applies leadership responsibility in leadership activity (Marzano, 2005). An individual leader cannot achieve this. In a time in our history when technology, communication, and information play such an important role in our understanding and perception of the world, educational institutions must remain connected to their environments (Tapscott, 2009). This connection will maintain

8

the legitimacy they seek and the customers they serve. Understanding the forces, trends, and the imperatives of a knowledge-based economy gives leaders the momentum for change in the technical core of teaching and learning (Wagner, 2008).

The educational leaders of today must be able to make sense of all the information, technological advances, global economy, and environmental pressures. Wise leaders see the good judgment in distributing leadership and using time to support the culture of collegiality, collaboration, and enactment.

Our students are relative experts in the technological tools available in today's information/knowledge society (Oblinger, 2003). Outside of school, many of our students are accomplished authors, animators, filmmakers, and recording artists (Knobel, 2009). If we want to keep our customers, developing and designing online educational settings in our public high schools must occur.

Context of the Study

This study was conducted in two West Michigan school districts during the 2009-2010 school year. The schools participating in the study were West Ottawa High School and Traverse City West High School.

West Ottawa High School (WOHS) is a comprehensive high school with a student enrollment of 2257 during the 2009-2010 school year. Traverse City West (TCW) High School is located in northwest Michigan and is one of two comprehensive high schools in the Traverse City Area Public School District. Enrollment during the 2009-2010 school

year was 1824 students. Eight teachers and one hundred and forty-five students participated in the study from both high schools.

Purpose of the Study

The purpose of this study was to conduct an examination of the implementation of blended learning instruction in two mid-size Michigan school districts. The "majority of the published work on blended learning is based on case studies and best practices rather than empirical studies" (Picciano & Dziuban, 2007, p. 7). By observing and examining what has occurred in the blended learning classroom in a high school setting, this study will provide information for high school teachers and principals about the best practice and essential elements of an effective implementation of a blended learning classroom. It is also important to conduct this study because it is vital to determine whether the impetus to adopt this pedagogical approach and its instructional strategies is appropriate for a high school setting. The following questions guided this study:

1. How did the design and delivery of the blended learning course impact students and their learning?

2. How did the teacher manage the two learning environments of online and face-to-face?

3. Did the blended learning environment support a community of learning and student-centered approach?

4. How did the use of technology assist in the design, delivery of instruction, and student learning in a blended course?

5. What were the barriers and facilitators to implementation of blended courses in comprehensive high schools?

Justification and Significance of the Study

This research examined the implementation of blended learning in two comprehensive high schools. The findings may have implications for change and professional learning of teachers in the blended learning setting. Professional development and continuous learning of teachers for the improvement of student-centered learning and understanding also has implications for the skills and mastery of essential elements in the curriculum that students must demonstrate in preparation for college and the global workforce.

Limitations

The following limitations have been imposed by the nature of this study. These limitations also affected the ability of this researcher to make generalizations from this research.

1. The data generated by this study are limited by the characteristics of the two schools under study and the communities in which they reside.

2. Participation in the study was voluntary.

3. Responses from interviews and surveys were assumed to be truthful and accurate.

4. Course grades were assumed to be based on student performance relative to course objectives and outcomes, not teacher subjectivity.

5. The researcher, who was also an employee as an administrator in the Traverse City Area Public School district, conducted the focus interviews. The researcher worked at a different school site and did not directly supervise or make decisions impacting the teachers or classes included in this study. While steps and methods were adopted to reduce researcher bias, it was not discounted.

6. Results from this study may not be generalizable.

Delimitations

Glatthorn (2005) defined delimitations as the boundaries of the study. For the purpose of this study, the following were delimitations of this study:

1. This study was designed to examine the blended learning instruction in a high school setting. It was designed to focus on blended learning delivery of curriculum and the instructional approach used by teachers.

2. Teachers interviewed and students surveyed were from Traverse City West or West Ottawa High School.

3. Data collection occurred over the first and second trimester of the 2009-2010 school year.

4. The survey instrument used was adopted from an existing survey developed by the Flashlight Online survey bank. It was reviewed and incorporated into the existing survey used by the Traverse City Area Public School district This survey was not assumed to be all-inclusive in its scope.

Researcher Bias

This study gathered data from the teachers and students in the Traverse City Area Public Schools and West Ottawa Public School district. The researcher was also employed in the Traverse City Area Public School district at a different site as an administrator. The researcher did not directly supervise or make decisions impacting the teachers or classes included in this study. To offset the bias, the preliminary findings were reported to the researcher's advisor and a colleague not connected with this study. It was the intent of this researcher to report the findings of this study, even though some of the findings were contrary to previous findings in previous case study research (Yin, 2009).

Definition of Terms

Online Learning – a type of education where the medium of instruction is computer technology.

Asynchronous learning – allowing students the ability to access and respond to class materials, resources, and communication at any time and from any location that is convenient (Bonk & Graham, 2006).

Blended Learning – the combination of online and face-to-face instruction. Blended learning instruction utilizes the best features of classroom interaction and live instruction to personalize learning, allow thoughtful reflection, and differentiate instruction from student-to-student across a diverse group of learners (North American Council for Online Learning, 2008).

Hybridization – to generate a new form by combining the elements of two different pedagogical approaches.

Student Engagement – a student who is in an active or operational state to create meaning or understanding of a concept or knowledge.

Course Management Software – a consistent user interface standard that handles all aspects of a course.

First Order Change – "incremental change that fine tunes a system through small steps that do not depart radically from the past practice" (Marzano, 2005, p. 66).

Second Order Change – "deep change that alters a system in a fundamental way and results in dramatic shift in direction for the system while requiring new ways of thinking and acting" (Marzano, 2005, p. 67).

NACOL – North American Council for Online Learning.

NASSP – National Association of Secondary School Principals.

ASCD – Association of Supervision and Curriculum Development.

Summary

The introduction of this study examined the implementation of blended learning in two comprehensive high schools in Michigan. The literature connected to the implementation of blended learning will be discussed in Chapter 2. The methodology used to conduct the study is included in Chapter 3, and results of the study are reported in Chapter 4. A summary with a discussion of the implications of the results will conclude the study in Chapter 5.

CHAPTER 2: REVIEW OF LITERATURE

This literature review examined the major concepts and factors appearing in the blended learning literature. The literature was primarily focused on studies occurring at the post-secondary level. The research on blended learning in high school is relatively sparse, and the public high school in the United States lags dramatically behind that of the post-secondary sector in terms of implementation and research in the blended learning classroom (Picciano & Dziuban, 2007).

Topics in this chapter include the empirical studies and research describing change and leadership, a learning environment, student engagement, learning, and technology and blended learning. Most of the theoretical and empirical literature related to blended learning comes from the post-secondary setting.

Change and Leadership

Change takes time, and for successful change to take place, leaders must allow for the appropriate amount of time for people to believe in the change proposed (Fullan 2007). Change and leadership are both means to an end when finding the way in the seismic cultural and economic shifts described by Marx (2006). Helping schools work toward new goals that meet the needs of students in the midst of these changes and shifts is challenging work for leaders. This is especially true for schools because they have been doing business as usual for decades (Larson, 2009). Fullan (2007) outlined the criteria for real change to occur in schools:

1. Belief that the proposed change can occur – motivation.

2. Belief that the proposed change makes sense – meaning.

3. They have a meaningful role in the change.

4. Individuals experience some success with the change.

While these criteria are helpful, there is no evidence that there is a single way to bring about successful change. However, Fullan (2001) argued that many other suggestions for successful change efforts are *nonactionable advice*). He suggested that although there is merit in the advice written by other scholars, change cannot be controlled. Change can be understood, however. Fullan wrote that there is no one recipe or answer, but "change can be understood and led, and the leadership can make a difference" (p. 34). The four criteria cited help leaders make a difference in the type of change taking place in a school or organization.

A meta-analysis of the leadership responsibilities of school leaders was conducted by Marzano et al. (2005). The researchers reviewed and identified twenty-one behaviors of effective school leaders. A factor analysis was conducted to further understand the relatedness of the twenty-one behaviors. Two factors underlie the twenty-one behaviors of leaders or principals: first and second order change. First order change is described as incremental and can be seen as the next most logical step to take in a school or district, a series of small steps that do not leave practices of the past. Therefore, it is typical for school leaders to practice this type of change because it is often the most logical step to and is generally safe. Fritz (1984) described the tendency and concern for approaching all situations as first order change.

A common rule of thumb is to have a formula about how things should work, so that if you learn the formula, you will always know what to do. From a reactive

response orientation, this notion is very appealing, because with such a formula, you would hypothetically be ready to respond appropriately in any situation. Unfortunately, at best it would prepare you for situations that are predictable and familiar. From the orientation of the creative, on the other hand, the only rule of thumb about the process is not to have a rule of thumb. (Marzano et al., 2005, p. 67)

First order change is best handled by leaders when needed changes are seen as managing the daily operations, the routine business of schools that demand corrections and alterations (Marzano et al., 2005). Many of the challenges facing education today are too complex to be handled as first order change. Fullan (2001) explained, however, that there are "big problems in schools and many schools are complex, with paradoxes and dilemmas" (p. 73).

Second order change is much more radical change that steps away from past practice and is characterized by *deep change* that fundamentally transforms the system (Marzano et al., 2005). It is speculated that many innovations in education have failed simply because the leadership failed to recognize that second order change was needed to successfully support and implement the innovation. School leaders must be willing to endure frustration from staff, problems associated with the innovation, and stressful situations (2005). However, leaders who can identify second order change as necessary to support the innovation often are capable of doing things differently and creatively.

Introducing and implementing blended instruction into an existing traditional high school challenges a school and staff on many levels. There are many organizational barriers that leaders must overcome to be sure that an innovation is successful. This

researcher would consider blended learning instruction a second order change simply because it aligns with the definition. Implementing the blended learning classroom requires deep change in terms of pedagogical approach to instruction and curriculum requiring the school leaders (teachers and principals) to know how blended learning will affect curriculum, assessment, and instructional practices. It requires that there is some impetus for the change that can potentially produce exceptional results. It requires that leaders are knowledgeable about best practice and theory in blended learning instruction and it involves challenging the status quo without knowing whether results will indicate success (Marzano et al., 2005). Much of the research at the post-secondary level describes the potential of blended learning instruction to be "transformational" (Graham & Robinson, 2007, p. 96).

The research of Marzano et al. (2005) indicated that it is often the leadership that determines whether an innovation such as blended learning can become transformational at the post-secondary or high school level. Some of the prominent theories of leadership researched and written about over the last half century seem to connect well when considering the implementation of blended learning instruction as second order change. It is the challenge and sense of urgency that compels leaders to move from their normal transactional state to ways that produce results (Larson, 2009). Larson also cited recent neuroscience research that demonstrates that our brain's primary function is to ensure survival. The experience of a "survival threat leads to a stress response often in the form of resistance" (p. 56). "Transformational leaders work to minimize the threat by reframing the new vision for the school as opportunities for improving the community, innovation, and leading edge programming" (p. 56). Transformational leadership asserts

four factors that portray the transformational leader: individual consideration, intellectual stimulation, inspirational motivation, and influence (Bass, 1994).

For the principal of a school, these factors may imply that they would be able to attend to staff needs and provide individual attention to those staff members who may need it. The principal would help staff think about old problems in new ways, while communicating high expectations for students and staff alike. Modeling high moral character, lifelong learning, and personal accomplishments would also reveal a model for teacher performance (Marzano et al., 2005).

Transformational school leaders inspire teachers to transcend their self-interests for the interests of the organization and raise the level of awareness and motivation toward the schools goals (Marks & Printy, 2003). However, in the study of the principal as a transformational and instructional leader, the findings indicated that "although it was critical for leaders to shape a positive organizational culture and contribute to organizational effectiveness, principals must continue to play a central and explicit role in instruction" (p. 376). Principals who are transformational leaders also accept their instructional role and work in collaboration with teachers (2003).

The Marks and Printy (2003) study demonstrated the effectiveness of integrated leadership, both transformational and instructional, in eliciting the instructional leadership of teachers for improving school performance. Arguably, principals who share leadership responsibilities with others would be less subject to burnout than principal *heroes* who attempt the challenges and complexities of leadership alone. When the principal "elicits high levels of commitment and professionalism from teachers and works interactively with teachers in a shared instructional leadership capacity, schools

have the benefit of integrated leadership; they are organizations that learn and perform at high levels" (p. 393).

Close attention by leaders to the nuances and elements of change and the type of leadership enacted for success of blended learning instruction is vital. This phenomenon cannot achieve the transformational potential that it purports if leaders do not understand the nature of significant change and the reform it may require of districts and schools.

A Learning Environment

The phenomenon of blended learning is relatively new. Essentially, this concept utilizes web-enhanced capabilities to hybridize the traditional classroom environment and online learning (Vaughn, 2007). When one considers that learning and the learning environment constitute critical elements to create understanding in learners, it is important to review how a blended learning environment impacts a student's experience in the learning environment. Vaughn explored the benefits and challenges of the blended learning classroom from the perspective of students and faculty at the University of Wisconsin. The study found that students liked the improved time flexibility and learning outcomes. But initially, they were challenged by the idea that less face-to-face classroom time does not equate to a lighter course workload. Vaughn also found that students (especially freshmen) had difficulty with time management as they "learn how to learn" (p. 86). Taking responsibility for their own learning was another challenge for students.

Faculty expressed that blended learning courses enhanced student-teacher interaction, increased student engagement in learning, and added flexibility in the teaching and learning environment. However, faculty said that there was significantly

20

more work required to develop a blended learning course, and therefore, time became a challenge (Vaughn, 2007). Receiving support for design and resources for development of courses were also clear challenges faced by staff. Additionally, teachers were concerned with the acquisition of new teaching and technology skills. Table 1 summarizes Vaughn's findings at the University of Wisconsin at Madison.

Table 1

Blended Learning Benefits and Challenges

Factors	Benefits	Challenges
Students		
Time flexibility	X	
Organize time better	X	
Fewer classes meant less work		X
Time management		X
Responsibility for learning		X
Teachers	X	
Increased engagement in learning process	X	
Course flexibility	X	
Environment forces improvement		
Less connectivity		X
Time commitment		X
Professional development support		X
Mastering new teaching and technology skills		X

Vaughn (2007)

Shea (2007) reminded educators that the focus should be on "grounded instructional approaches" before deciding what technology will be used in the classroom

or implementation of blended environments (p. 32). This will avoid the "tech-driven design and mistakes" previously made (p. 32).

To fully capitalize on this idea, Bransford, Brown, and Cocking (2000, 2002) posited a different model. This conceptual model assists in understanding what research has indicated about learning and teaching and learning in the technology-mediated classroom (Shea, 2007). This theoretical framework, shown in Table 2, is referred to as the *How People Learn* (HPL) framework. In this framework, "good learning centered environments" are learner-centered, knowledge-centered, assessment-centered, and community-centered (p. 21).

Table 2

How People Learn Theoretical Framework

Good Learning Attributes	Characteristics
Learner-Centered	Activities focus on goals and interests of the student. Understand who students are.
Knowledge- Centered	Enhance student understanding rather than memorization. Active learning focuses on depth rather than breadth.
Assessment-Centered	Helps learners make thinking visible. Curriculum and assessment are aligned. Formative feedback and substantive interaction.
Community-Centered	Promote connectedness, collaboration, and construction of knowledge.

(Bransford et al., 2000, 2002)

In the learner-centered environment, careful attention is paid to the knowledge, beliefs, skills, and attitudes that the learner brings to the classroom. Teachers are aware

22

that learners construct their own meaning, and therefore, instruction is conceived as constructing a bridge between the subject matter and the learner (Bransford et al., 2000, 2002). For the blended learning classroom, a teacher may need to carefully consider the activities relative to face-to-face instruction in the traditional classroom (Shea, 2007). Shea asked whether the blended setting can be designed to engage learners more deeply and how this can be accomplished. To be effective, the learner must be put in an active role where there is construction of meaning and connection to the subject knowledge rather than the traditional transmission of knowledge model (Bransford et al., 2000, 2002).

The knowledge-centered environment attempts to enhance the *doing* in learning rather than just memorization. The learner-centered approach to teaching and classroom environments does not help students acquire knowledge (Bransford et al., 2000, 2002). Knowledge-centered environments help students develop an understanding of a discipline, but both learner- and knowledge-centered approaches are necessary for the instructor to consider where the learner begins and ends in the construction of meaning and understanding of subject matter (Shea, 2007). In a blended setting, the environment must be designed to leverage the benefits of online and face-to-face settings. Considering both of these settings and how they can be combined effectively will help to build upon the incoming learners' abilities (2007).

The assessment-centered approach helps students make their learning and thinking visible (Shea, 2007). Ideally, what is assessed is congruent with the learning goals (Bransford et al., 2000, 2002). For the blended learning environment, this means

there is consideration of computer- or technology-mediated assessments such as online assessments.

The final criterion for effective learning environments is a community-centered approach, which stresses that the environment is collaborative and community-oriented (Shea, 2007). Collaborative and community-oriented classrooms promote the interaction among the participants of the classroom environment. In a blended learning environment, this could be accomplished by promoting a cooperative environment that promotes learning rather than competition. Shea pointed out that to the extent to which we promote or enable learners to engage in productive discourse with the new technology available is the extent to which we promote better learning.

However, recent studies have indicated that the teacher's emphasis and role in promoting the integration and interaction may have an effect on the learner's view of the online activities (Shea, 2007). One study indicated that students do not participate intensely in blended environments. Gudzial and Turns (2000) found that students only wrote four to five messages in a ten-week period. Another study found that computer-supported collaborative learning was being used only for the exchange of opinions, not for collaborative knowledge-building (Stahl, 1999). The teacher's ability to promote, facilitate, and integrate online and face-to-face interactions is essential to blended learning. If students feel the online activities are only supplemental and not integral, then the blended learning environment fails to achieve its potential (Shea, 2007).

Garrison's Practical Inquiry model (Garrison, Anderson, & Archer, 2001) of cognitive processing, as discussed by Shea (2007), suggested that the online activities must progress through a triggering event, an exploratory phase, an integration phase, and

a resolution phase. A triggering event is an issue, dilemma, or problem that emerges from an experience often explicitly communicated by the teacher. An exploratory event occurs when "students are required to perceive or grasp the nature of the problem, and then move to a fuller exploration of relevant information" (Garrison et al., 2001, p. 4). The integration phase requires students to make meaning from the ideas produced in the exploratory phase. The resolution phase means implementing the proposed solution or testing the hypothesis by means of practical application (2001).

Cycling through these phases in the online activities will produce higher order learning (Shea, 2007). When constructing and designing the blended learning setting, it still remains critical to consider the medium and the method in the instruction (Kozma, 1991).

With the framework of *how people learn* for designing methods of instruction, the theory of constructivism should also be considered (Duffy & Cunningham, 1996). This theory asserts that it is experiences and the opportunity to reflect on the experiences that allow the learner to construct and understand the world around them (Ed Online, 2004). The constructivist theory encourages learners to be active creators of their own knowledge (Brandon & All, 2005). Duffy and Cunningham (1996) shared a general view about constructivism: (1) learning is an active process of constructing rather than acquiring knowledge, and (2) instruction is a process of supporting that construction rather than communicating knowledge. This pedagogical approach is inquiry and discovery-based. An underlying assumption of constructivists is that learning occurs through "reflection and linking new knowledge to an existing framework of knowledge" (Brandon & All, 2005, p. 91).

Encountering new experiences requires reconciliation with previous ideas and experiences. This approach assumes students are active creators of knowledge and understanding (Ed Online, 2004). Teachers in a constructivist classroom encourage and accept student ideas and initiatives; use data and primary sources along with manipulative, physical, and interactive materials; encourage dialogue and questioning behavior with teacher and fellow students; look for ways to elaborate on student responses; allow wait time after posing questions, and provide time for students to construct relationships and create meaning (Marzano et al., 2000).

Students in the constructivist classroom learn how to learn. In the traditional classroom, the teacher assumes the majority of the intellectual work, and learning is often a matter of a passive existence in the classroom (Ed Online, 2004). Students learn quickly that the teacher will often provide all of the information they will be expected to know and memorize. Learning follows a logical order and sequence, and many of the experiences are meant for the class as whole without much consideration of where the student might be in his or her understanding or experiences (Ed Online, 2004).

In the constructivist classroom, the teacher plays a central role, more so than in most instructional design frameworks (Duffy & Cunningham, 1996). The teacher serves as a guide rather than the source of knowledge and performance required, for this new role is far more complex than traditional classroom teaching (Lincoln & Stommen, 1992). The teacher "attempts to engage children by organizing and assisting students as they take the initiative in their own self-directed explorations, instead of directing their learning autocratically" (p. 469). Flexibility is the most important feature of the new role the constructivist teacher must assume (Duffy & Cunningham, 1996).

Considering the advice and recommendation of Shea (2007) to focus on grounded instructional approaches before deciding on which technology to use in the classroom serves to support the notion that a constructivist approach to teaching and learning would serve students well in a blended learning classroom.

Technology complements constructivism in several ways. How the equipment is used in the classroom will make the difference. Technology must be thought of as an integral component of the curriculum (Lincoln & Stommen, 1992). The web has opened a portal to vast amounts of information that is accessible from school, home, or other remote locations. Students can initiate searches independently, and primary source material is available through many institutions (Ed Online, 2004). In addition, there is immediacy to the information students attempt to access. This access is a critical feature in a blended learning class that may not meet each day in a whole group setting (Bonk and Graham, 2007). It would, however, be critical that all students have access to a computer at school or home to be able to complete such inquiry.

Computer-based tools have tapped into students' multiple intelligences and enabled those with aptitude in visual learning, for example, to demonstrate knowledge creation more effectively (Center for Digital Education, 2007). Teachers are restructuring their classrooms so that students can participate as producers (Ed Online, 2004, Website: Exploration Tab). In a blended learning classroom, use of the course management software is essential. The course management software is the application that not only houses important digital documents for the course but also provides the tools for the teacher to communicate asynchronously or synchronously with students (Ed Online, 2004). The course shell and course management software makes information digitally

available for student access twenty-four hours each day. Technology has also enhanced

communication (Starenko & Vignare, 2007). Dialogue, discussion, and ideas can be

extended beyond the classroom using email, live chats, and asynchronous discussion

threads (Ed Online, 2004). Students can collaborate on work regardless of their location

with such applications as *Google Docs*, an important feature for blended learning

classrooms.

Student Engagement

The elements that contribute to high levels of student engagement are a mixture of

the background of individual students, influence and expectations of parents and peers,

and the school-wide instructional practices (Jones, 2008). Whether in a virtual

environment or a more traditional classroom, student engagement is a lynchpin to student

understanding and mastery of content. Renzulli (2008) stated that all learning is on a

continuum from deduction on the one end to induction on the other. He also indicated

that all students from at-risk to college prep engaged more deeply when working on

something personally engaging. His call to action for schools is to halt the endless

practice that simply prepares students for test-taking and to move toward more enjoyment

of learning. This shift means teachers using methods and resources that are heavily

centered on inquiry (Anderson, 2009). At the classroom level, the teachers most

successful at engaging students have been those who have designed activities that

endorsed relevancy, encouraged student autonomy, fostered collaboration, aroused

curiosity, and provided challenging but achievable tasks (Brewster & Fager, 2000).

This position is supported and more closely defined by high schools administering the High School Survey of Student Engagement (HSSSE). The survey describes the schools participating, student demographics, and student academic tracks. More interesting, however, is the quantitative data revealed by the survey responses. The report defined student engagement as the students' relationship within the school community: the people, the structures, the curriculum and content, the pedagogy, and the opportunities (Center for Evaluation and Educational Policy, 2007). More than 81,000 students participated in the survey. A great majority indicated that they have been bored in school, and 22% of students who responded indicated that they have considered dropping out. The report indicated that a significant aspect of the quality of engagement is the importance students place on the activity. Students reported they were most intrigued by teaching methods that required collaborative learning, debate, discussion, group projects, presentations, and activities in which they were active participants. Students were least interested or engaged in the classroom environment where they did not play an active role, such as lecture (Center for Evaluation and Educational Policy, 2007). However, a qualitative study that examined the life of a high school student from a student's perspective reported that students work hard to follow agendas of their teacher and peers (Pierce, 2005). Students stated they were bored, yet they still saw the importance of saving face with their teacher. The study also suggested that students see individual classrooms as *hothouses* for student social life. Students can be very successful, endure only, or fail miserably (2005). This point of research has significant implications for students' experience not only in the traditional classroom but also in online and blended classrooms.

The HSSSE report also broke student responses down into three dimensions of engagement: cognitive/intellectual/academic engagement, social/behavioral/participatory engagement, and emotional engagement. The significance of these criteria helped the participating high schools define the broad areas wherein they may be failing their students as related to engagement (Center for Evaluation and Educational Policy, 2007). Pierce (2005) stated that teachers have a hand in shaping students' school experiences. He calls for teachers to abandon a model that still requires teachers to host students in classrooms but to re-examine the traditional roles of the teacher and student. Jones (2008) stated that "Teachers must familiarize themselves with two elements on which to and facilitate student engagement: preconditions and pedagogy" (p. 2).

Preconditions are factors that must be in place before instruction even begins. Jones (2008) said that these factors are "learning relationships, creating a positive classroom environment, rewards and encouragement, guiding principles, habits, and basic skills" (p. 4). Pedagogy factors include "rigorous and relevant learning, personalized approach, active learning strategies, and a focus on reading" (p. 5).

According to Ritchhart (2010), teaching for student engagement and understanding requires teachers to identify the big ideas and generative topics within curriculum. He stated that there are seven common criteria that engage students in deeper understanding of a project, activity or unit of study: " rigorous, authentic activities that mirror real work of adults; independent learning; a thinking disposition; a revealing curriculum that indicates what students do and do not understand; a rewarding curriculum with a sense of purpose; and reflective activities" (p. 4) There seems to be a great deal

that a teacher and school can do to engage students in learning, but engagement is more likely to occur with students when the activities have an inherent value (NASSP, 2007) .

Although K-12 institutions have attempted to address this issue of engagement through structural reforms, Renzulli (2008) suggested that these changes are focused too closely on remedial/prescriptive pedagogy intended to improve standardized test scores. He stated that change is possible if we focus on advances in the information technology now available to high schools. Renzulli claimed that technology has given a teacher the equivalent of a *dozen* teaching assistants, making it more of an easy process for a teacher to help students' access student interests, learning styles, and modes of expression. Pierce (2005) did not specifically mention the role of technology in student engagement but assessed that there must be alternative approaches and classroom arrangements from the teacher as a transmitter model.

Learning

Learning theory suggests that student learning or engagement is enhanced when students are actively involved in their learning (Newmann, 1996). The projects and assignments that reproduce real world experiences and deep-substantive learning and thinking are encouraged through applied and reflective activities (Bransford et al., 2000/ 2002). Newmann (1996) and colleagues conducted a study during the 1990s that tried to understand whether all of the efforts surrounding school restructuring really impacted student achievement. Specifically, they wanted to know how school restructuring would nurture authentic forms of student achievement. They called high quality intellectual work *authentic achievement*. Authentic achievement "depended on three main variables:

31

construction of knowledge, disciplined inquiry, and the value of learning beyond school"
(p. 22). Newmann made the distinction between authentic and contrived learning by
saying that students do not become engaged in their work at school when they cannot
find meaning in their school work. For the most part, students consider grades and test
scores trivial and only relevant for entry into college.

One of the biggest culprits of meaningless knowledge and work in school comes
from the shallow exposure to thousands of isolated pieces of knowledge (Newmann,
1996). Newmann indicated that student engagement has an emphasis on "intellectual
activities and accomplishments that are meaningful, significant, and worthwhile" to
students, and there is some linkage to activities that successful adults undertake in the
real world (p. 23). Isolation of activities from the real world makes it difficult for students
to see or understand how the intellectual work can produce achievement.

To attain authentic achievement or student engagement, Newmann (1996)
explained that three elements must be present: construction of knowledge, disciplined
inquiry, and valuing achievement beyond school. He pointed out that the intent is not to
indicate that all forms of unauthentic achievement should be discarded, but make
authentic achievement the clear goal for students to experience in their classrooms of
learning.

In the classrooms that supported academic achievement, several characteristics
were woven throughout the lessons that were observed in Newmann's (1996) study:
"student tasks, relevant and meaningful activities and projects, teacher attitude toward
achievement, and classroom organization" (p. 214). Students were engaged in complex
tasks that required students to face problems for which they would generate solutions.

32

These projects and tasks also promoted student collaboration and shared responsibility for project outcomes.

Teachers set the tone for learning the first day students arrive. The initial activity and even the greeting indicated to students what type of learning will go on in the classroom (Student Engagement, 2008). This would be the reason why Newmann's (1996) findings suggested that it is the teacher's attitude and relentless pursuit to establish a culture of learning that is a significant characteristic influence upon authentic achievement of students.

The classrooms that promoted student achievement were strong in their organization properties. Space and time were used effectively, and non-academic business was minimized and handled efficiently. Teachers also required students to reflect and participate by offering ideas to solve problems. Newmann's (1996) findings were echoed at a forum held by the Alliance for Excellence in Education, where one of the speakers, Pedro Noguera, expressed his concern over the dropout crisis occurring in public high schools. His recommendations were to "include improved teaching that relied less on lectures and test preparation, and more on interaction, while making curricula more relevant to students' lives" (Student Engagement, 2008, p. 2). He also called for solutions such as "building stronger ties between students and adults through mentoring and advising, and designing systems to better help educators intervene with at-risk students" (p. 2).

Engagement Theory describes the existing and potential use of technology for teaching and learning (Kearsley & Shneiderman, 1998). The theory emphasizes meaningful learning, collaboration, and constructivist approaches. In these settings,

engaged learners are involved in an active cognitive process through problem-solving, creating, reasoning, decision-making, and evaluation (Kearsley & Shneiderman, 1998). Munro and Rice-Munro (2004) mentioned that there must be balance between instructional design, content knowledge, and technology. Technology does not guarantee effective learning. However, technology can help bring real world problems into the classroom, provide tools to enhance student learning, improve communication, expand teacher learning, and give students and teachers more opportunities for feedback (Bransford et al., 2000/2002). Fostering student engagement by using approaches such as project-based learning, collaboration, and critical thinking is not a new concept, but using technology to assist the ways such activities elicit student engagement is a new phenomenon (Palak, 2006).

To know how to engage learners in an online setting, one study looked at the use of a virtual learning environment to engage students in out-of-class activities (Leese, 2009). The study's purpose was to consider a range of methods to engage students. The project clearly linked to the use of technology to improve student engagement but was also about the move from "teacher-led delivery to student-centered learning" (p. 73). The study used a virtual learning environment (VLE) that was described as computer-based, where sharing of information between students is possible. Students were given weekly tasks that were to be completed within their learning groups, and then the work was to be posted by a set time. This method provided timely feedback and sharing of group work results across all of the groups. The study collected data through focus groups, module feedback forms, and a questionnaire about the use of the virtual learning environment.

The results revealed that all of the groups completed the required assignments, but there were some complaints that some students did not "pull their weight" (p. 75).

Overall, however, feedback was positive with a range of comments that reflected positively on the new format and design for the course. The author pointed out, however, that it was likely that the positive comments were made by students who enjoyed the use of technology. Students also indicated that they improved skills in group work, presentation, and technology skills. In addition, the pass rates and the average student grade increased (Leese, 2009). This study shed light on the importance of the design of activities in an online environment. Design is crucial to connecting classroom learning and online learning. It also revealed that it is the lens teachers see through and the beliefs they carry that may make the difference about whether an online activity is engaging to students.

Another study posed a question whether the integration of instructional technology was to be used as a tool for learning or a device to deliver instruction? The study concluded by first submitting that instructional technologies are powerful tools (Palak, 2006). But in the function of those tools it still remains the teachers' beliefs, individual teaching style, philosophy, and belief about how technology can be integrated into the curriculum (2006).

"Student engagement, learning, and achievement, therefore, remain the result of the interaction of complex, multidimensional, and interrelated factors" (Bonk & Graham, 2006, p. 131). The literature and research reviewed in the present study indicates that many of the factors in a traditional face-to-face and online classroom setting that affect a

student's learning experience will also be important factors for the blended learning environment (2006).

These variables and the interaction of the variables suggest the theoretical framework for student achievement in a blended learning setting. The framework shown in Figure 1 to accomplish student engagement and achievement in a blended course requires a relationship between course design, technology integration, student-centered learning and individualized instruction, factors of primary importance for blended learning environments. The factors are interdependent with one another, and it is the interaction of these factors that produces engaged students and meaningful learning experiences.

Biggs (2003), as cited in Leese (2009), developed the *3P model* to alleviate concerns about students who have little prior knowledge or experience with technology-based tasks. *Presage* refers to a student's prior experience before commencing with a blended course. *Process* refers to what students would be expected to do. This would include students working together on planned online tasks formulated to support students gaining skills such as collaboration, negotiation, presentation and group work. *Product* is the end result (p. 73).
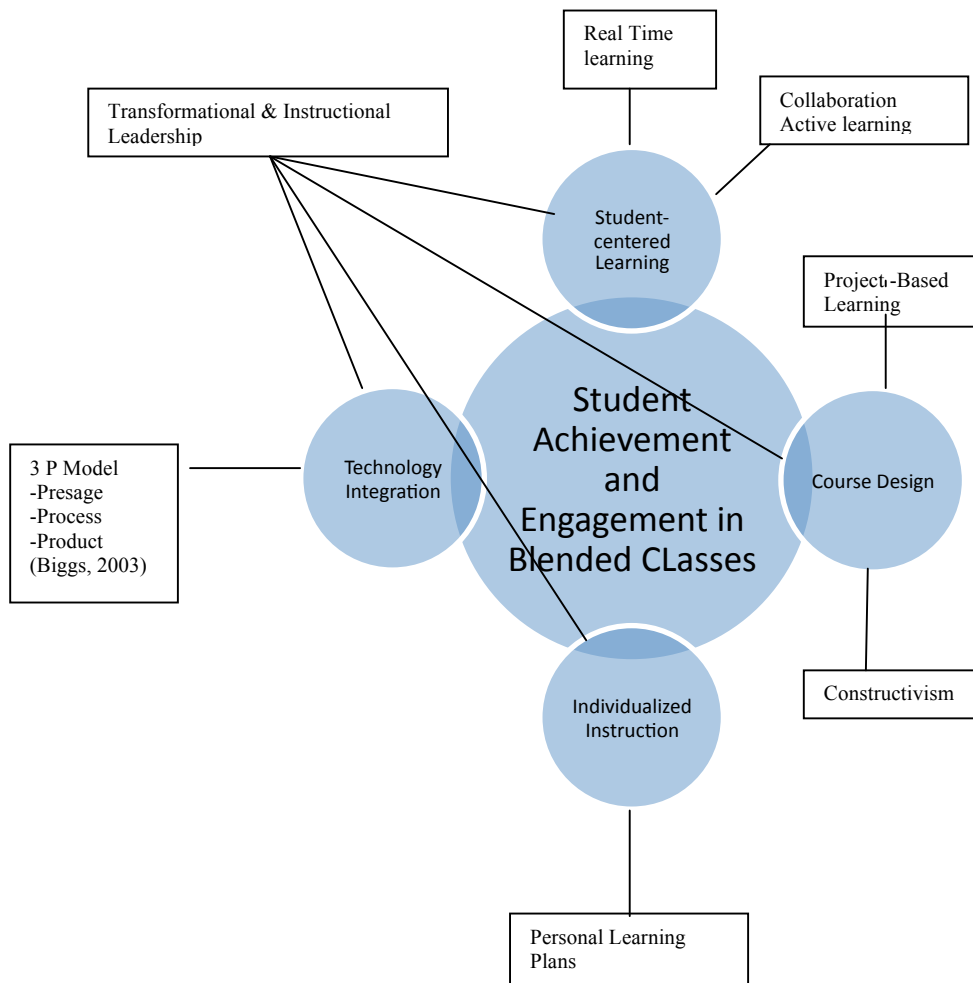
Figure 1. Concept Map for Blended Learning

Student-centered learning is a shift to a student-centered approach in the

classroom versus the traditional *sit and get* teacher-directed environment. Students would

be engaged in collaborative relationships that require active learning and problem-

solving (Brewster & Fager, 2000). Course design would be grounded in a constructivist

approach that emphasizes project-based learning and real connections to the outside community. The blended classroom could use technology, enhance communication between student and teacher, and increase interaction to personalize and individualize instruction.

This conceptual framework also suggests that the type of leadership that would be necessary to capitalize on the potential of the blended learning class must be transformational and instructional; but, as mentioned above, the teacher is the critical element who can make this new pedagogical approach effective to student learning. The teachers bring their beliefs, individual teaching style, and philosophy about how technology can be integrated within the design of the course, within the planning and preparation, and within the classroom environment and instruction (Palak, 2006).

Technology and Blended Learning

According to Thornburg (2002), the increasing globalization of work and the rapid advancement of technology is making age-old teaching methods irrelevant. Thornburg mentioned that one of the greatest challenges to incorporating new practices in schools would be of a human nature not technological, because the examination of the validity of assumptions that have been held for generations would be the deciding factor about whether schools reform their practice. Regardless of how this reform plays out in individual districts and buildings across the country, new technology could change how learning is accomplished. The trend toward virtual learning in the kindergarten to twelfth grade setting is exploding (Pierce, 2005). Yet it may remain the teacher who is the critical element and resource for student achievement, learning, and engagement (2005). It is the

developer and designer (teacher) who defines the specific process being learned and the approach that could foster learning (Munro & Rice-Munro, 2004).

Researchers at the University of Minnesota have recently discovered the benefits of social networking sites for students (Educational Benefits, 2009). Data were collected over a six-month period from students aged sixteen to eighteen in high schools throughout the Midwest. The study found that students using social networking sites were practicing the 21st century skills they need to develop to be successful today. Editing and customizing content as well as thinking about design and layout while practicing safe and responsible use of information were a few of the skills developed. Students were also sharing their original work such as poetry and film. The study emphasized the potential that websites offer the educational community (2009).

In time, schools may offer courses in multiple settings for a myriad of reasons, including the ability to attract and retain students for state funding (Bonk & Graham, 2006) or perhaps for flexibility in credit recovery or schedule alleviation (NASSP, 2004). Ultimately each environment has complexities that require the teacher to design, implement, and deliver content and experiences that are relevant to the learner in the presence of content (Wallis, 2006). Technology offers a way to increase access to knowledge and a way to promote learning (Bransford et al., 2000, 2002). Bransford indicated that when considering technology in the learning environment, the framework of creating learning environments that is learner-, knowledge-, assessment-, and community-centered is useful (2000, 2002).

Blending different approaches (online and face-to-face) to learning is not a new idea, and blended learning represents a combination of a variety of approaches (Graham

& Robinson, 2007). The distinct difference in the discussion of blended learning currently is that "information technology and the development of virtual learning environments are used to support learning" (p. 85).

There is a wide range of variability in the definition of blended learning. The definition may be dependent on the approach of an individual teacher, school or district. It should not be assumed that everyone understands the definition for blended learning. The University of Glamorgan in Wales has developed a continuum that specifies the blend as the use of an online medium for basic information and communication technology, like *PowerPoint*, to the e-intensive stage. This stage would have modules delivered and moderated online but may still have some face-to-face elements (Graham & Robinson, 2007).

A working definition developed by the Sloan Consortium states that blended learning is the integration of online with face-to-face instruction in a planned, pedagogically valuable manner that trades off face-to-face time with online activities or vice versa (Starenko &Vignare, 2007). The North American Council for Online Learning (NACOL, 2008) defined the blended learning setting as the combination of online delivery of content with the best features of classroom interaction and live instruction to personalize learning, allow thoughtful reflection, and differentiate instruction from student to student across a diverse group of learners. Regardless of the definition, Graham and Robinson (2007) found that there were three reasons people selected the blended learning approach: improved pedagogy, increased access, and flexibility and increased cost effectiveness. Definitions of blended learning may extend to include any learning experience that integrates some use of educational technology (NACOL, 2008).

Some of the most common elements cited in the empirical research and literature include the blending of face-to-face and online instruction for the purpose of satisfying a portion of content delivered online, using multiple approaches to learning, or enhancing the classroom experience by using new information and communication technology (NACOL, 2008). For the purpose of this study, the working definition of blended learning was adopted from a combination of sources including the North American Council for Online Learning (2008), a research brief by Dzuiban et al. (2004), and research conducted by Bonk and Graham (2006): A pedagogical approach that combines the effectiveness and socialization opportunities of the classroom with the technology enhanced, active learning possibilities of the online learning environment across a group of diverse learners.

This definition allows for flexibility of instruction as teachers begin to experiment with the possibilities of a blended learning approach. This pedagogical approach should not merely be seen as a ratio of delivery models [face-to-face or online], but as a "fundamental redrawing of the instructional model, including a shift from lecture, to an increase in interaction that contains integrated assessment" (North American Council for Online Learning, 2008, p. 5)

There have been many studies that suggest the fundamental shift blended learning proposes. One study, conducted at Brigham Young University (BYU), examined how blended learning was changing instructional practices and the prevalence of blended learning at BYU (Graham & Robinson, 2007). Data collected came from faculty surveys and interviews. The data revealed that female teachers were more likely to use blended learning strategy, and adjunct professors were three times more likely to use blended

learning strategy than not. Findings also revealed that faculty rarely substituted online instruction for face-to-face instruction.

The Graham and Robinson (2007) study exposed a clear distinction between enabling, enhancing, and transforming blends. Enabling blends merely create greater access and convenience for students, whereas enhancing blends increase student and teacher productivity. However, a transformational blend moved from information transmission pedagogy to active learning constructivist pedagogy (p. 96). The authors of the study concluded that for blended learning to reach the transformational level, the primary objective of the teacher should first focus on the teaching and learning relationship and then efficiency or productivity (p. 107).

Another study examined the sense of community in higher education blended learning environments. The study's hypothesis postulated that the sense of community would be greatest in the blended setting. The rationale was that the face-to-face and online activities provided a greater range of interaction among students with each other and with their professor. The study found that interactions would lead to higher level of socialization, connectedness, and increased construction of knowledge through discourse (Rovai & Jordan, 2004).

Starenko and Vignare (2007) studied the impact of the blended learning environment on the teaching and learning environment. They used qualitative data sources such as surveys, interviews, and narrative from faculty and students at the Rochester Institute of Technology (RIT) and also collected course statistical data on completion rates and grade distribution. The faculty narrative provided data about staff perceptions of and experiences with blended learning. The narratives revealed that most

staff was drawn to the blended format because they thought it would produce greater student-to-student interaction. Faculty who taught primarily lecture-based courses indicated the student-to-student interaction increased. However, the faculty who primarily taught discussion-based courses indicated that the blended course deepened or intensified the discussions (2007).

The study also revealed that the blended learning pilot courses offered multiple modes of communication among students and their professor, promoted widespread and even participation, encouraged peer-to-peer teaching and learning, and shifted the faculty role from imparting knowledge to facilitating learning (Starenko & Vignare, 2007). Data were also collected on the faculty perception of student engagement, and the results revealed that the faculty detected improvement in communication between students and between students and their teacher. Additionally, improvements were noted in class discussions after online discussions, greater levels of intellectual curiosity, and improvement in the quality of ideas (2007).

The study exposed how students felt about their blended experience. Students indicated that the teachers used different instructional strategies in the blended learning courses. Students also confirmed that faculty used more and different resources in their blended learning courses, and that the online activities also provided for different ways to learn than classroom activities (Starenko & Vignare, 2007).

The course grades collected in the study revealed that the overwhelming majority (95%) of students did well in the blended courses as defined by receiving a grade of C or better. A major conclusion of the study was that blending allowed for the free sharing of

opinions and ideas, especially for students who are challenged to do so in a traditional

face-to-face setting (Starenko & Vignare, 2007).

These studies begin to make the case for blended learning classrooms. Blended

learning is promoted as the best of both online learning and face-to-face learning

environments. However, there can also be a combination of least effective elements of

online and blended environments (Bonk &Graham 2006). The design of the blended

learning environment makes the difference, for it requires the environment to link

pedagogy, technology, and the learners' needs in a community-centered environment

(Jones, 2008). The foundational principles for designing the blended course should be

aligned with the instructional core, which simply consists of the student and the teacher

in the presence of content (City, Elmore, Fiarman, & Teitel, 2009). The instructional task

is what students are actually being asked to perform, and the task predicts performance

(2009).

While design may make a difference in the experience of a participant in a

blended learning classroom, there should also be consideration of blended learning as an

innovation. Rogers (1995) stated that innovation is an idea, practice, or object that is

perceived by an individual or group who is adopting it. The "*newness* of the innovation

may determine the reaction by those adopting the innovation. *Innovativeness* is the

degree to which an individual or group is relatively early in adoption of the innovation as

compared to others in the system" (1995, p. 23).

Rogers (1995) classified the rate of adoption by individuals or groups in a system

as innovators, early adopters, early majority, late majority and laggards. Innovations that

are perceived by the adopters as an advantage, compatible to current practice, observable,

can be done as a pilot, or have low complexity, have a greater rate of adoption. Recognition and consideration of this research in the implementation of blended learning may lead to greater success.

As blended learning becomes more established, it offers the opportunity for educators to develop new methods of communication with and among students, develop learning activities that are engaging to the digital native learner, and differentiate instruction to meet the needs of the diverse learners' styles presented in any classroom (Bonk & Graham, 2007). The above review indicates that it is the careful consideration of many elements in the design of instruction that creates a setting for greater student understanding and learning.

Blended learning has been characterized as transformational in terms of learning. One particular study indicated that it is the transformational practices of the teacher-leader that help to cultivate the transformational nature of blended learning. More precisely, the study found that transformational leadership behaviors, as defined previously, are of great importance where communication is constrained by technology (Puranova, 2009). The study also found that leaders asserting the tenets of transformational leadership had a stronger effect on virtual teams than face-to-face. This suggests that the importance of transformational leadership behavior is essential under more indefinite communication conditions created in electronic communication. It also supports studies on effective leadership practice which indicated "the greatest potential for influence comes from situations of social and psychological uncertainty" (p. 353). Leaders who increased their transformational leadership behaviors in their virtual teams, as compared to their face-to-face teams, had the most successful teams. The findings in

this study supported the notion that leaders who implement technology effectively can overcome the challenges posed by virtual communication and lead effective classrooms to encourage the transformational potential of blended learning instruction (2009).

While the potential of blended learning instruction is well documented in the current empirical and scholarly research, the impetus to adapt such a model to improve instruction and provide more of a student-centered approach for learning can be overshadowed by the organizational barriers that have blocked the expansion and adoption of innovation in the public school system. Some of the barriers exist within the school or district's own community. Local governmental and non-governmental actors could support or hinder innovation adoption like blended learning. These actors may be school board members, the superintendent, or other central office administration and teacher unions (Fowler, 2000, 2004). "Effective leaders know who these policy actors are, where they can be reached, and who should be contacted about specific issues" (p. 159).

Summary

The researcher's theoretical model for blended learning instruction was introduced in this chapter, and several keys areas that should be considered when implementing blended instruction at the high school level were discussed. Areas of emphasis included change and leadership, learning and the environment in which it occurs, the technology-mediated classroom, student engagement, and current concepts.

The methods used to conduct this multiple case study that examines the implementation of blended learning instruction in two comprehensive Michigan high schools are discussed in Chapter 3.

CHAPTER 3: METHODOLOGY

Technology has impacted many aspects of life including the educational setting. It is important to understand how this tool can impact the pedagogical approach that teachers take to align with the needs of the learners in their classrooms. One approach that has emerged from the convergence of technology and pedagogy is the blended learning environment. This type of classroom uses the technology available to incorporate asynchronous learning opportunities, which may provide students with more relevance in their understanding and learning of content in a given subject. This "pedagogical approach should not be seen merely as a balance between delivery models but as a fundamental redrawing of the instructional model" (NACOL, 2008, p. 5). Ultimately, however, it is the responsibility of educational institutions and the educators who teach in the schools to shift from a transmissive approach to a constructivist approach. This may keep students engaged and learning.

Some of the most common elements of blended learning cited in the literature included blending of face-to-face and online instruction for the purpose of satisfying a portion of content delivered online, using multiple approaches to learning or to enhance the classroom experience by using new information and communication technology (NACOL, 2008). A working definition of blended learning was adopted for the purpose of this study: a pedagogical approach that combines the effectiveness and socialization opportunities of the face-to-face classroom with the technology-enhanced active learning possibilities of the online learning environment across a group of diverse learners (Dziuban, Hartman, & Moskal, 2004; NACOL, 2008; Bonk & Graham, 2006). This

definition allowed for flexibility of instruction, as teachers in the high school setting became comfortable and explored the possibilities of a blended learning approach.

This multiple case study examined the implementation of blended learning in two comprehensive high schools in Michigan (Yin, 2009; Stake, 1995). The two schools were selected because they have introduced and implemented blended learning in several classrooms at each high school and were offered as an option to students each spring during course selection for the next school year. The number of courses offered with a blended learning approach was determined by the number of students who signed up for the courses and the teachers who were willing to incorporate this method of instruction in their assigned course(s). West Ottawa Public Schools and Traverse City Area Public Schools received a waiver from the Michigan State Department of Education to ignore the provisions of Section 50 of the pupil accounting manual. This allowed for the expansion of online learning options for high school students (Flanagan, 2007) and also allowed West Ottawa High School and Traverse City West High School to launch a blended learning program.

The study used multiple data points. Data were gathered from students and teachers. Data from students included surveys, student grade distribution, and direct observations by the researcher. Measurement of student interaction was calculated by student login to the course website (Moodle) and student participation in online course discussion threads or forums. A student login was considered a *hit*. Hits were determined as the total number of times a student logged into the course shell or participated in discussion threads while logged into the course management software (Moodle). The content of student online responses on the course management software was also

analyzed. The written responses from students were assigned a score of one (weak) to four (strong) using the rubric shown in Table 3. The rubric, developed by a Traverse City language arts teacher, assessed the level of competency by a student's response through the assessment of ideas and content in the written response (S. Long, personal communication, July 8, 2009).

Table 3

Rubric for Assessment of Students' Written Responses.

Level of Competency	4 Strong	3 Good	2 Average	1 Weak
Ideas and content Development	Extremely well developed with relevant evidence, details, examples, and explanations	Reasonably developed with some evidence, details, examples, and some explanations	Little evidence, few details and examples, and little explanation	Lacks evidence, details, examples, and explanations
Focus on topic	Extremely insightful and well-focused on topic	Insightful and fairly well-focused on topic	Limited insight and little focus on topic	Not insightful or focused on the topic

Data were also collected from teachers of the blended learning courses. The teachers were asked to provide a narrative describing the experience of teaching a blended learning course. Teachers responded to writing prompts regarding their preparation for blended learning instruction, actual instruction, classroom culture or

environment, student learning, assessment, and their own professional or personal experience. Teachers were asked to write at least five hundred words reflecting on their experience. The blended learning teachers also participated in one or more focused interviews about their teaching experience when the course was completed at the end of each trimester. The guide for the focused interviews conducted with teachers was adopted from a study conducted by Dr. Robert Kaleta (2007) from the University of Wisconsin. His study researched the design and deliverance of hybrid courses. After review of the instrument, Dr. Kaleta was contacted and gave permission for the interview guide instrument to be used for the current study (R. Kaleta, email communication, April 11, 2009). See Appendix A for a review of the instrument.

Research Design

Careful consideration must be taken when designing a study (Glatthorn, 2005). Yin (2009) explained that every piece of empirical research has a research design.

A research design is a plan that guides the investigator in the process of collecting, analyzing and interpreting observations. It is the logical model of proof that allows the researcher to draw inferences concerning causal relations among variables under investigation. (p. 26)

There are two major perspectives to research design: quantitative and qualitative. The quantitative perspective emphasizes studies that can be expressed numerically, are experimental in nature, and are measurable (Glatthorn, 2005). Studies primarily quantitative in nature can be carried out in various approaches or types: experimental,

quasi-experimental, causal-comparative, correlational, descriptive, and evaluation research (2005).

Qualitative research may also be conducted in many ways. Miles and Huberman (1994) described some of the features of qualitative research: contact with the field of study for a prolonged time, the researcher is the main measurement device, most analysis is done with words, and multiple interpretations may be possible. Some approaches to data analysis in the qualitative design include interpretive, social anthropology, and collaborative social research (1994). Types of qualitative research include case study, action research, and ethnographic research. The strengths attributed to the qualitative research design are that the research is "naturally occurring in a natural setting" and is effective in helping determine and locate the "*meanings* people place on events, processes and structures in their lives" (p. 10).

The design of qualitative research should be flexible. A case study approach was chosen for this study. It is an "empirical inquiry that attempts to investigate a contemporary phenomenon that occurs in a real life context" (Yin, 2009, p. 18). According to Glatthorn (2005), the case study is a disciplined approach to shed light on the meaning of a phenomenon in its context using an inductive process.

This researcher used the following questions to guide the study while examining the implementation of a blended learning instructional setting.

1. How did the design and delivery of the blended learning course impact students and their learning?

2. How did the teacher manage the two learning environments of online and face-to-face?

3. Did the blended learning environment support a community of learning and student-centered approach?

4. How did the use of technology assist in the design, delivery of instruction, and student learning in a blended course?

5. What were the barriers and facilitators to implementation of blended courses in comprehensive high schools?

Research Methods

This study used a multiple case study approach with multiple data points to investigate the implementation of blended learning in two comprehensive high schools in Michigan. This section will discuss sample selection, data collection, and the process used for data analysis.

Sample Selection

Qualitative research works with relatively small sample size but considers depth and context. Quantitative sampling, however, tries to achieve large sample size absent of context (Miles & Huberman, 1994). The sample in this study was selected because the selected high schools were the first in Michigan to implement the blended learning classes. The teachers and students who participated in this study were part of a blended learning program offered by one of the high schools. This study did not use data from students or teachers who were not direct participants in a blended learning course at either high school.

Informed Consent

The informed consent of the participants was secured prior to commencing the

research to ensure a high ethical standard. This included approval by the Eastern

Michigan University Human Subjects Review Committee, West Ottawa Public Schools

(WOPS) and Traverse City Area Public Schools (TCAPS; see also Appendices B and C).

Each of the teachers in the West Ottawa and Traverse City districts who

instructed a blended learning course at the high school level was invited to participate in

the study. The principals of each high school also served as the contact person for general

communication. A brief description of the study and the data to be collected were

included in a letter to the principal and teachers. Upon acceptance of the invitation to

participate in the study, the participating teachers were asked to meet with the researcher

and the principal of their high school to be fully informed about their role and receive

details of the study. Participating staff members were asked and required to sign forms

related to human subject approval for research from Eastern Michigan University and

their school district (See Appendix D).

The parents of each student who participated in this study granted approval for

their child's participation. An informed consent letter approved by Eastern Michigan

University's Human Subjects Review Committee was signed by parents (See Appendix

E). Special care was taken to maintain privacy and confidentiality of teachers and

students in the report of this study.

Data Collection Sources

This researcher used several data sources for this study. Yin (2009) described and

proposed several sources of evidence for case study research: documentation, interviews,

direct observations, archival records, and physical artifacts. A short description of each

source follows to provide the importance and role each source may play in the collection

of data for a case study.

Documentation refers to "evidence that corroborates or augments evidence from

other sources" (Yin, 2009, p. 103). The documents can be used to verify spellings and

titles or names of organizations mentioned in the interviews. They can also be used

corroborate or contradict data from other sources, and the documents can be used to make

inferences from the documents collected (2009).

Interviews are one of the most critical data sources in a case study because "most

case studies are about human affairs or behavioral events" (Yin, 2009, p. 108).Yin

referred to three types of interviews: (1) in-depth interview, (2) focused interview, and

(3) structured questions in a survey format. In an interview, Yin described the necessity

of the interviewer to operate on two levels: first, to support the line of inquiry and second,

to create a pleasant atmosphere that is non-threatening so that the participant continues to

participate.

Archival records seem to be a very relevant and important data source, especially

with the computer as a very significant information resource (Yin, 2009). Examples of

archival records may include public use files, service records, maps, charts, and previous

survey data. Researchers must "be careful to review the conditions under which the

records were produced and their accuracy" (p. 106). Knowing the conditions under which

the records were produced will help the researcher interpret the usefulness and accuracy

of the records (2009).

In a case study, direct observation has an important role because it is a data-gathering activity that gives the researcher an opportunity to observe relevant behaviors and environmental conditions and serves a purpose to aid in the understanding of the phenomena (Yin, 2009). Yin described "observations ranging from formal to casual data collection activities" (p. 109).

The final source of case study evidence used in this study was physical artifacts. The physical artifact "can be an important component to the overall case" and "provide broader perspective than what might be provided in a directed observation over a limited time" (Yin, 2009, p. 113). The researcher should be knowledgeable of the techniques shown in Table 4 to ensure each source captures the intended evidence and data.

Table 4

Case Study Sources of Evidence

Data Source	Description
Documentation	Verification of study information. Corroborate/contradict/make inferences of other study data.
Interviews	Focused interviews create a line of inquiry and maintain participation in the study.
Archival Records	Public files, charts and survey data. Interpretation of data subject to the conditions created under.
Direct Observation	Observation of relevant behaviors and environmental conditions.
Physical Artifacts	Aids in understanding the phenomenon. Provides deeper and broader perspective of the study.

Yin (2009)

Yin (2009) described three principles of data that are pertinent to all of these sources of evidence: the use of multiple sources of evidence, development of a case study database, and establishment of a chain of evidence.

When using multiple sources of evidence, the case is strengthened by an effect called *data triangulation.* Using multiple data points produces a scenario where the case study findings are more convincing and precise (Yin, 2009). This study used multiple sources of data including an online survey to be completed by students at the end of the course. In addition, the study asked teachers to complete a narrative in reference to their experience instructing students in a blended learning setting. At least one focused interview with the blended learning teachers was conducted at the end of each trimester during which the data were collected. Finally, direct observations, student grade distribution, and the occurrences of a student's participation on the course management software were tabulated. Student responses on the asynchronous discussion forums were also analyzed for content. It was important that the data collection techniques were properly executed, because this study relied on the multiple sources of evidence to strengthen the findings and the conclusions that were drawn.

The second principle of data collection is to create a case study database. There are four widely accepted components for the development of the database: case study notes, case study documents, tabular materials, and narratives (Yin, 2009). For the purpose of this study, the case study notes were organized by teacher interviewed and in chronological order of when the interviews occurred. Notes were also separated by school. All notes were transcribed into an electronic version so that the classification system for the original paper copies served to back up the electronic copies. The

transcribed electronic notes were classified in the same manner and then stored in electronic folders.

Documents that were relevant to the case were collected. All tabulated information was stored in computer files and folders for the ease of recall and retrieval for review and inspection of data by other researchers. In this case, some of the tabulated data were the results from the students' survey, grade distribution, and hit totals in the course management software.

The participating teachers were asked to reflect on their experience teaching a blended course. The teacher narratives were collected at the end of the first and second trimester of the 2009-2010 school year. Each narrative was dated upon receipt and then organized and saved according to files identified by the teachers and school.

The third principle for data collection is maintaining a chain of evidence, which serves to increase the reliability of the information in the case study. An external observer can "follow the derivation of any evidence and follow the steps in either direction" (Yin, 2009, p. 122). In this study, it was the intent to provide a transparent method for the collection of data so that it would allow for an external observer to review and replicate the evidence and steps taken.

Data Collection Process

Each piece of data and its collection were designed to help the researcher examine the implementation of blended learning in a high school setting. The researcher obtained research proposal approval from the researchers committee and the Eastern Michigan University Human Subjects Review committee. Permission was also obtained from West

Ottawa Public Schools and Traverse City Area Public Schools Human Subjects Review committee.

The researcher met with principals from both high schools to review the study, clarify any questions they had, and provide final details of the procedure and research steps to be followed. Blended Teachers at each high school were invited to participate in the study. Participation was voluntary, and they could withdraw at any time during the study.

The researcher visited blended classrooms at each high school and explained the study to the students enrolled in each blended classroom. A letter was sent to parents of all students enrolled in a blended course offered during the 2009-2010 school year. The letter described the nature of the study, the collection of data as it pertained to the students, and the confidentiality that was kept throughout the study. Parents were asked to contact the researcher or the building principal with concerns or questions. Parents and students could choose not to participate in the study. Permission to participate was secured from parents of all students in blended learning classes.

Direct observations were conducted in each blended classroom at both high schools. These observations were conducted twice during each trimester for each teacher participating in the study. At the end of each trimester, a student survey was administered to all students participating in the blended learning courses offered at either high school. The results were compiled and interpreted.

The researcher conducted a focused interview with each participating teacher. The purpose of the interview was to elicit an explanation, insight, or description from the teacher being interviewed. The questions were adopted in advance, using the interview

protocol created by Kaleta (Kaleta et al., 2007). Once the interview was completed, the researcher transcribed the interview and submitted it to the interviewee for accuracy. A second interview was conducted by telephone or email if clarification and verification of teacher responses was needed.

Teachers participating in this study were asked to provide any documents and artifacts relevant to the nature of the blended learning classroom. An open-ended, written reflective narrative about their experience teaching a blended learning course was collected from each teacher.

A student grade distribution for each participating blended classroom was collected at the end of each trimester from an assistant principal at each participating high school. All grades were collected anonymously with no reference to student name or student identification number.

Student interaction in the course management system (Moodle) was collected by analyzing the number of hits on the site throughout the trimester of the course. Students were coded so that the researcher did not know or match the hits with an individual name of a student. Asynchronous discussion and comments made by students on the course management software were also analyzed and reviewed for the content of the comments.

Data Analysis

The researcher used three strategies suggested by Miles and Huberman (1994) to analyze the data collected in this case study: data reduction, data display, and conclusion drawing and verification. Data reduction is an activity where the researcher is able to

"select, focus, abstract, and transform the data to draw final conclusions that can be verified" (p. 10).

Data display is organized to *generically* display the information gathered, which allows for conclusions to be drawn, and the researcher begins to know, understand, and conclude what is displayed (Miles & Huberman, 1994).

Conclusion drawing and verification requires the "researcher to begin deciding what data may mean by noting the patterns, regularities, causal flows, explanations, propositions, and possible configurations" (Miles & Huberman, 1994, p. 11).

A strategy suggested by Yin (2009) was also used by this researcher. The narrative "represents the attempt by the researcher to integrate the available evidence from the data collected" (p. 121). The "good answers" generated by the researcher should connect the issues of the case to the specific evidence using appropriate citations (p. 122).

Various data collection strategies were used to analyze and reduce the data collected from the multiple data points in this study. Focused interviews were conducted on each school site. Interviews were transcribed and then combined for each response to the questions in the protocol. The interview responses were marked for patterns and similar responses. The researcher identified emerging themes from the interviews and posted ideas, comments, and remarks from the interviews on post-it notes. Post-it notes were assembled on poster board, and then labeled with themes and topics from the results. Themes and roles teachers assumed in this study are discussed in Chapter 4.

Notes and margin reflections from the researcher were added to the collected teacher narratives. Post-it notes were used to record ideas, comments, and remarks from each narrative and then assembled on poster board with focused interview results.

All student survey responses were put into a bar graph representation. The open-ended responses were grouped by similar responses and emerging themes. Themes were then posted on the poster board with teacher narrative and focused interview data.

The researcher conducted direct observations in cooperation with each blended teacher in the study. Teachers were reminded that the direct observations were not evaluative in any sense, and no information and data gathered within the direct observation would be shared with the building principal unless there was illegal activity violating the school code of conduct. The researcher conducted direct observations twice per trimester for each blended course included in the study. During the direct observations, the researcher coded teacher and student activity along with the time that activity took place.

The researcher used a coding system developed by Stake (1995) to observe and measure student-teacher interaction and activity in the classroom. Broad categories for classifying interaction included student talk and teacher talk. Student talk was further subdivided to responsive student talk, initiative student talk, and silence or confusion. Teacher talk was further subdivided to indirect influence and direct influence (Stake, 1995). Indirect influence of teacher talk was coded by this researcher as the teacher praised and/or encouraged students, accepted ideas from students, asked questions, or accepted feelings of students. Each area of the subgroups was assigned a number that facilitated coding classroom interaction between students and teacher. From the coded information, the researcher identified trends and patterns in face-to-face instruction in the blended courses at West Ottawa and Traverse City West high schools.

Online interaction data collected from the course websites were randomly selected from forums teachers posted on their course sites (Moodle). A rubric shown in Table 3 was adopted and used by this researcher to evaluate the student posts and responses. The rubric helped to assess whether student responses met criteria for ideas and content in their individual responses. The researcher also reviewed the number of responses and logins for each class included in this study. Data thus recorded were used by the researcher to identify trends and patterns. Grade distributions from each blended course in the study were put into a table for display, and conclusions were drawn from these data.

The data collected for this study were reduced and analyzed from general to specific trends and emerging patterns. Observations were made of behaviors, situations, interactions, objects, and environments. Then, topics were identified from the observations and put into categories and then from categories to patterns. Conclusions were induced based on the patterns and categories identified. Emerging patterns were further reduced to identify specific activity, which could impact the researcher's interpretation takes from the data collected. "Conclusions were used to answer the research questions" (Charles, 2002, p. 180). Implications and recommendations for practice emerged from the data reduction strategies.

Validity and Reliability

The quality of any given research design can be judged by certain logical tests. The tests commonly defined to establish the quality of empirical social research are construct validity, internal validity, external validity and reliability (Yin, 2009). Construct

validity is defined as identifying the correct operational measures for the concepts being studied. The three tactics developed by Yin are the use of multiple sources of evidence, establishment of a chain of evidence, and having the draft case study report reviewed by key informants.

In this study, the researcher satisfied the first requirement by collecting multiple sources of data: staff narratives, focused interviews, direct observations, student surveys, student grade distribution, and course management software data that included student comments and the number of occurrences that each student frequented the site. Doing so also helped to establish a chain of evidence needed for construct validity. Respondents were asked to review the findings of this research and respond on their accuracy and acceptability.

The quality of this research design must also be judged by the internal validity. Internal validity includes two concerns to which a researcher must pay specific attention. First is the causal relationship a researcher may draw from the evidence and data retrieved from the study. This study did not look for a causal relationship in the examination of implementation of blended learning in a comprehensive high school setting. Second, the concern is whether inferences made are correct (Yin, 2009). This can be especially challenging with a multiple case study design. One strategy that may assist in the accuracy of inferences is *explanation-building*. The researcher's "goal is to analyze the case study data by building an explanation" (p. 141). This technique requires a series of iterations. The iterations are revised throughout the case based on new data, and, as a result, the final explanation may look very different from the beginning explanation (2009).

The important aspect of this analytic technique in this case study comes from the notion that there are many *plausible* explanations already described in the literature about blended learning environments. However, this study examined a high school setting. As such, this study used explanation-building as an analytic technique for analysis and data presentation. Yin (2009) pointed out that this strategy can be "fraught with danger" and suggests that constant reference to the original purpose of the study and possible alternative explanations may help to reduce problems with this analytic technique (p. 144). Establishing a chain of evidence, using multiple sources of evidence and creating a case study database helped to strengthen the internal validity of this case.

External Validity.

The third test that assists in judging the quality of design in a study is the external validity. External validity determines whether the findings of the study are generalizable beyond the case study being proposed (Yin, 2009).

This study was designed to examine the implementation of blended learning in two comprehensive high schools in Michigan. Therefore, this study presents explanatory data on the subject of the implementation of blended learning instruction, and making generalizations is limited to the scope of this study.

Reliability.

The final test of the quality of design is concerned with whether the study can be replicated with similar findings. The reliability is what Miles and Huberman (1994) referred to as "quality control" (p. 11). Reliability requires that the operations of the study, such as data collection, can be repeated. In this multiple case study, the tactics to improve the reliability of the study included the development of a protocol and

65

procedural steps that assisted in examining this case. The data collected from the

instruments were placed in the database.

Summary

This chapter included a discussion of the methodology used to examine the

implementation of blended learning instruction in a comprehensive high school setting.

Findings will be reported in Chapter 4, and a discussion of the results, theoretical

implications, and recommendations for further research will conclude the dissertation in

Chapter 5.

CHAPTER 4: RESULTS

This study examined two school districts that have implemented blended learning instruction in a high school setting. The data for this study were gathered through multiple data points. These included focused interviews with instructional staff of the blended learning courses, teacher narratives, student response surveys, direct observations, course artifacts and course grade distribution, and student online interaction results. The focused interviews were completed orally in a question-response format, recorded with a microcassette recorder, and then transcribed in the responder's exact words into a useable *Word* document.

The guiding questions of the study directed the collection and interpretation of the data. Data were gathered over two academic trimesters during the 2009-2010 school year. The following questions guided the study:

1. How did the design and delivery of the blended learning course impact students and their learning?

2. How did the teacher manage the two learning environments of online and face-to-face?

3. Did the blended learning environment support a community of learning and student-centered approach?

4. How did the use of technology assist in the design, delivery of instruction, and student learning in a blended course?

5. What were the barriers and facilitators to implementation of blended courses in comprehensive high schools?

Decision to Implement

Each school had institutional reasons for the decision to implement the blended learning instructional format. For example, West Ottawa High School decided to implement blended instruction partially because of the integration of technology in the classroom instruction. Both participating high schools are considered *comprehensive,* and both have a school improvement process that includes reviews of research and data on high school redesign and reform. Teacher participants in the study indicated that it was their principal who introduced and requested that teachers think about the initiative for implementation in their classrooms. One West Ottawa teacher stated:

When the principal was asking for volunteers I felt comfortable with computers, and so I was happy to volunteer and pilot it and then continue.   I didn't have to keep teaching this way, it's kind of a voluntary basis, but I'm still into it.

Other teachers acknowledged that the decision to implement stemmed from a decision to "try something new and cutting edge that would get students ready for the 21st century." Teachers also stated that the technology allowed for more "online experiences" and work with programs they thought were "more interactive."

Teachers at each high school also declared that they hoped to accomplish several purposes by implementing blended instruction. One teacher stated:

I like the idea of developing relationships with kids online who I wouldn't normally reach in a face-to-face setting because classes are so big.

68

A Traverse City West teacher said:

> I was hoping it would be a medium in which a different style of kid could learn.
> Some kids just are shy, bottom line, and you hide them behind a computer and
> they can be pretty confident there; and I was hoping that style of kid could thrive
> a little bit better in a blended format of the course than in a face-to-face.

Other purposes stated were:

> I wanted the students to be exposed to a different kind of learning. I wanted them
> to be able to feel like it will be in college taking online classes because I know
> that more and more colleges offer online classes. I'm just afraid these kids are
> going to be shocked when they get to college because they will not understand
> how to be an online learner. So I thought that that would be a real benefit for
> them to experience the blended format, and it would push me in my teaching.
> I wanted to give them meaningful instruction in a lot of real world applications,
> where they can go out and see, here's a connection, here's a case study; further
> analyze it, and, with the on-line blended portion, you have the world at your
> fingertips with the internet.

Demographics

Eight teachers participated in this study. Each was invited by his or her principal
to teach a blended instruction course. Three teachers from the West Ottawa district taught

a blended course during the first trimester, while the remaining taught during the second trimester. Two teachers from the Traverse City district taught their blended course in the second trimester of the 2009-2010 school year.

The teachers taught many different content areas including economics, anatomy-physiology, advanced expository writing, general English, business, and psychology. The participants ranged in age and years of teaching experience. Seven of the eight teachers participating in the study had previously taught in a blended instruction course.

The following demographic description of both high schools is also graphically displayed in Table 5.

West Ottawa High School

West Ottawa High School (WOHS) is located in Western Michigan. It is a comprehensive high school with a student enrollment of 2257 during the 2009-2010 school year. Twelve per cent (12%) of the students were handicapped and have documented support through an individual education plan. Forty-seven percent (47%) of students were eligible for free or reduced lunch. West Ottawa High School student population is made up of Caucasian (57%), Hispanic (28%), Asian/Pacific Islander (10%), and African American (5%). West Ottawa High School has a four-year graduation rate of seventy-eight percent (78%) and a dropout rate of two percent (2%).

Traverse City West High School

Traverse City West (TCW) High School is located in northwest Michigan and is one of two comprehensive high schools in the Traverse City Area Public School District. Enrollment during the 2009-2010 school year was 1824 students. The student body has a

special needs population of 12% with documented support through an individual

education plan. Twenty-nine percent of students are eligible for a free or reduced price

lunch. Ninety-three percent (93%) of students are Caucasian. The four-year graduation

rate at West High School is 95%, and there is a dropout rate of 3%. Seventy-six percent

of students enroll in a post-secondary experience.

Table 5

Demographic Data 2009-2010

Description	West Ottawa High School	Traverse City West Senior High
Enrollment	2257	1824
Post-Secondary Enrollment	84%	76%
Graduation Rate	78%	96%
Drop Out Rate	2%	3%
Race	57% Caucasian	93% Caucasian
Students eligible for Free/Reduced Lunch	47%	29%
Special Education	12%	12%

Data Analysis

To analyze the data collected in this multiple case study, the researcher used four

activities: data acquisition, data reduction, data display, and conclusion drawing and

verification (Miles & Huberman, 1994). In the beginning stages of data collection, the

researcher must decide what things mean by noting the patterns, regularities, causal flows, explanations, propositions and possible configurations (p. 11).

In the data reduction strategy, the tasks of the researcher are to "select, focus, abstract, and transform the data" (Miles and Huberman, 1994, p. 10). This process continues even after the fieldwork is completed and until the final report is completed. A part of the analysis includes data display. In this activity the information gathered is displayed, which leads to understanding and allows for conclusions to be drawn (p. 11).

These processes in the handling of data allowed the researcher to draw final conclusions that can be verified. This is the final activity required for analysis. Drawing conclusions is only half of what is required because the conclusions must be verified to ascertain whether the conclusions are credible or useable. Verification requires that the meaning made by the researcher has to be tested for "plausibility, sturdiness, and confirmability" (Miles and Huberman, 1994, p. 11).

A narrative described by Yin (2009) was used in this study to answer the questions at issue in the study. It represents the attempt to integrate the available evidence from the data collected (p. 121). According to Yin, the "good answers" generated by researchers have connected the issues of the case to the specific evidence using appropriate citations (p. 122).

The data were sorted by name of the course teacher and then chronologically sorted. As the data emerged, the steps identified by Charles (2002) as *logico-inductively* were used. This process used logic to make sense of observations in behaviors, situations, interactions, objects, and environments. Topics were identified from the data and put into categories and categories into patterns. Conclusions were induced on the basis of patterns

and categories identified. Conclusions were used to answer the guiding questions of the study (Charles, 2002).

Online or Face-to-Face

The teachers in this study considered what best practices and activities would be effective for either face-to-face or the online environments. Many teachers stated that the use of the online environment was reserved for activities like readings, journal response, and extension activities from class lectures, online research projects or collaborative group projects that students completed through *goggle docs*. The teachers were divided about students completing tests and exams online. Teachers found ways to convert traditional face-to-face activities to online assignments. For example, one teacher said:

> Because we're not working together all the time, I would have to sometimes convert a traditional assignment, like some sort of group project, into a forum discussion topic. For example, there's a couple of assignments in the classroom, (there is one we're doing right now) where they have to research companies that use different business strategies, which are basically just different ways that businesses compete, and in the classroom I would have them find their examples and then have them come up front and present their PowerPoint on the screen. We don't have time to do that in an online classroom. So instead, I did the same instructions: go online, find your examples, put it in a *PowerPoint*, and post it in a forum. So, each student did a post. They attached their *PowerPoint* to that forum, and then the students were supposed to go and look at all the *PowerPoints*, look at all the examples and then comment on each other's.

Four of eight teachers in the study indicated that their determination of how to use face-to-face class time was dictated by student questions and frustration about online content. Teachers saved the "tricky concepts that need explaining" for the face-to-face classes. Teachers reported that if they thought students would have a hard time understanding course content, they would cover that aspect of the content in the face-to-face portion of the class. Face-to-face was also used to conduct labs and simulations. One teacher reported that as the class progressed through the trimester he was increasingly "required to take time to answer questions about content." He stated, "This was often due to the complex nature of the science content, and students were not grasping the concepts that they were expected to learn, or students needed affirmation for the learning in the online portion of the class."

Six of the teachers in this study cited the professional training they received prior to teaching a blended course as the critical element that helped them to decide what was online or face-to-face. One of the six teachers stated that, "It would be difficult for a teacher to be an effective blended facilitator if they did not participate on some sort of blended instruction training, teachers must re-think the learning activities and adopt them to the online environment." During training sessions, teachers in the West Ottawa district were required to create and critique each other's lessons prior to ever teaching their first blended course.

Ann (trainer) really focused us on finding meaningful activities. And going out there and finding, there are tons of resources that we were not even

knowledgeable of. She brought it to our attention and forced us to create some

lessons in class and analyze them as a group as to what was a good lesson.

The decision about what activities should be online or face-to-face is discussed further

when considering the multiple dimensions the blended teachers in this study had to take

on.

The Blended Teacher

Teachers assumed multiple dimensions in their roles as a blended teacher:

pedagogical, social, managerial and technological (Kaleta et al., 2007).

Pedagogy

For the purpose of this study, the pedagogical dimension of the role for blended

course teachers refers to the design and delivery of learning activities in the face-to-face

and online environments (Picciano & Dziuban, 2007). Many of the activities in the

pedagogical role were related to course conversion, course (re)design, and the delivery of

instruction.

All teachers in this study were asked about the experience of converting their

traditional course to the blended format. The responses most frequently cited were those

related to the conversion of traditional face-to-face activities to make online activities

effective for learning. Responses about time to create the course for each environment

were also stated by five of the eight teachers. All teachers expressed a concern about

meeting high school content standards for subject areas with less face-to-face time than in

traditional classrooms. One economics teacher expressed his concern that he was given

autonomy for redesign "but not really," because the course needed to have the same content expectations as the traditional course.

Five other teachers also commented that their training to become a blended course teacher highlighted that "you should not just port your current (traditional face-to-face) class to an online environment." Trainers were specifically clear that "it becomes a really poor course if all you are doing is adding all the assignments to an online course site." Seven of the eight teachers remarked that they had to take advantage of the *functionality*, and West Ottawa teachers also shared that they had to spend a great deal of time analyzing activities. One business teacher shared her perspective this way:

> That was the most time-consuming piece, to take an activity that you really like in the classroom and go, ok, I want to keep this activity, but how do I make it effective for my online learners? So that took a lot of time, a lot of thinking. I still have some work to do on some activities that I'm not 100% happy with, but it was very challenging because nobody is telling you the best way; there are so many different ways, and you need to read books about online learning; you have to go on to web sites and read the best techniques. You have to try it, and when it fails, you have to go back and revamp it. So that was probably the biggest hurdle to overcome.

Many of the results from other teachers were similar. For example, the remaining seven teachers indicated it was difficult to quantify the amount of additional time because many were still evaluating and refining which activities were effective in the online or face-to-face environments. The selection of activities in the online and face-to-face

environments was the most time-consuming because it required matching activities to course goals, learner outcomes, and high school content expectations. However, even with more time spent in course redesign, five of the eight teachers still indicated that it was fun devising ideas on what to do. All eight teachers also confirmed that despite the greater commitment to course conversion, design, and activity selection, the effort was worth the time because the blended format was "best for students." Support for this position came from teacher comments like "it was good college preparation," or "it provided students with more control over their learning," "allowed students to pace their learning and work," and it was "big communication advancement for students."

Much of the current literature and case studies about blended learning environments and course redesign points out that the "course and a half syndrome" is a common concern for blended teachers (Kaleta et al., 2007, p. 127). Data indicated that in redesign and selection of activities for both environments, teachers are inclined to include too much content and activities for the course (Picciano & Dziuban, 2007). In this study, only one teacher verified this phenomenon in her course conversion to blended. She stated:

> I did feel, and they [students] said this too, the first time I taught it I was giving them more work than I was in the other classes because I felt, well gosh, they're not coming to school for this many days, I better give them a bunch of stuff. So then they were complaining about that, but they didn't have anything to compare it to. I still don't know, should I be giving them more work because they don't meet as often, or not?

Blended course teachers in this study identified and reflected on the distinctive areas in which teachers were required to take on a pedagogical role to prepare and implement courses under a *blended* label, but the data revealed that there were several other roles assumed as blended teachers.

Community of Learners

In the social role of a blended course, teachers interacted and communicated with students in the online and face to face environments to create a *community of learners* as in the traditional face-to-face classroom. Overwhelmingly, all teachers said that while communication was asynchronous and "lacked spontaneity, you get to know students in a different way than you would your traditional kids."

> The kids get to know each other also in a different way. Typically, in a traditional class, you have kids that come in who already know each other. When you say ok, let's do a group assignment, they kind of go and work with who they know, and they don't want to really push themselves to meet new people. I think they get away from that in a blended class. They're a little bit more open to working outside of their comfort zone. They did know each other; again, they struggled sometimes initially when we saw each other face-to-face. But online, they knew the names; they knew what certain people were interested in. So that was really neat to see because you want to create an online learning community. And sometimes it's frustrating, but it can take a whole trimester or semester to do that, it takes a while.

Four teachers reported they had "concerns and fears about communication" in the blended environment. Three of the eight teachers cited losing the connection with students. One teacher explained, "The communication from me is so much more instantaneous when we're doing class discussion. When we're having a discussion I can jump in and play devil's advocate or direct the conversation one way. And I can do that on a forum, but kids don't pay attention."

However, teachers also stated that the requirements of the blended instruction forced student participation and more student writing. One teacher suggested this by saying:

> The forums force them to have a conversation and to be involved in the
>
> conversation. It also forces them to practice written communication so that their
>
> thoughts are written so others can understand. That was huge communication
>
> advancement for these kids.

A West Ottawa teacher pointed out that it benefited the "shy people" and required "students to respond to other people's posts."

> I'm just thinking of the class I just had; *(student name),* super quiet, never speaks,
>
> but I know she's got a big voice in terms of her opinion. So, I would never hear
>
> that in a traditional classroom discussion, but on the forum, then they do say what
>
> they're thinking.

Teachers shared that the "online discussions would carry over into the classroom instruction." An anatomy teacher stated, "That's why my face-to-face sessions evolved. The sessions kind of stopped being purely lab and they [students] basically come in, and

it would be 10-15 minutes as fast as I could get through various questions and answers."

For six of the teachers, the interaction online and the face-to-face discussions in the

classroom were enough to "support greater collaboration and motivation to participate in

face-to-face activities." Yet one teacher noted that the online component "promoted more

isolation in student learning and this meant less relationship building." To further

illustrate this concern, one teacher stated the following example:

> The challenges were that some kids did not want to talk to me. I knew they were
>
> struggling, I knew they had questions, they wouldn't contact me. Even though I
>
> would say I'm here, I'm here during first hour on the days we don't have class –
>
> come in. [Student] OK, I'll come in and then they wouldn't come in. It was
>
> almost like they were scared to have an interaction, because they're not used to
>
> that maybe. They're used to just kind of sitting in the background and maybe
>
> they're not used to kind of in-your-face type of style. So I think that was
>
> probably one of the biggest challenges in regard to that particular role.

To build confidence and trust with students and to support connection and

relationship building, five teachers discussed the importance of immediacy of feedback in

response to student questions, comments, posts, or uploads. Teachers suggested that they

accomplished this, but "it required closer monitoring of students and progress due to the

online component."

Teachers in this study supported the findings of the literature review. Teachers

reported that online communication can establish "different relationships" and even more

"intimate" relationships within the community of learners if teachers "utilize and take

advantage of the interactive features like forums, blogs, journals, wikis, and other features that support active online interaction among the students and teacher."

Four of the eight teachers in this study recommended that teachers "should find ways to do group work online" and "incorporate some kind of response during online days." Seven teachers also cited the importance of using the "communication tools, so that students know what the best means of communicating with you would be." Faculty professional development may suggest methods about the blended format to broaden relationships and communication in both environments among staff and students to create a community of learners (Picciano & Dziuban, 2007).

Managerial Role

The findings in this study pointed out that the blended course compelled teachers and students to be more organized than they might be in a traditional course. The managerial role requires that the teacher oversee structure and coordinate tasks (Kaleta et al., 2007). Most instructors commented about the greater commitment of time:

It's a lot more work. It's the hardest I've worked in years in terms of hours per day, and just time spent working from scratch trying to figure out what I'm going to do. The experience just takes much longer, because the online component forced greater organization by the teacher. I could look at their assignments, I could give them feedback, I could participate in forums, and I could be posting new assignments and those kinds of things. That's why I got into the habit of getting to school at 6:00 a.m. every morning so I could have an hour and a half

before school to work on some of that stuff as well. Hopefully, as time goes on, I'll be more efficient with that.

Due to the online activity six teachers reported they spent more time online at night because "students will also ask questions online; they're doing their assignments late at night, so that's when they'll have their questions. So I check email at night, I respond to questions at night." Three teachers said they looked at the class site many times per day because teachers wanted to provide help, support, and review responses for forums and journal entries. Both high schools in this study did not schedule students during the online days and teachers were expected to:

Have that as a release hour of sorts, where we can focus on the creation of the course and the communication with the students. So for three days a week, I have this first hour block, where the kids are who-knows-where, and that was my chance to be on Moodle. I could look at their assignments, I could give them feedback, I could participate in forums, and I could be posting new assignments and those kinds of things. But those three hours a week were not anywhere near enough time.

Despite the lack of time, teachers stated the importance of flexibility and organization of the course as a benefit and challenge for teachers. They reported concerns about finding the appropriate frequency of face-to-face meetings. One teacher stated:

The first year I struggled choosing how many days do we meet in the classroom, how many days are they not in the classroom. For me the magic number has always been two. I started with two face-to-face days in the first year, stuck with

that in the second year. What I have found in the second year is that I can sense a little bit better if they don't need that second day. I had a very strong group this year and there were a couple of times when I realized, they did not need to come in a second day this week because they're doing so well. So I would tell them, Friday is an option. I call it a lab day, if you want to come in and work, I'm going to be here. But if you feel like you're good on your own, stay home and work at home. So I guess I could sense a little better when we needed the two days and when we didn't. So you start to get a little more of intuitive feeling about it.

The frequency and pattern of face-to-face meetings at either of the high schools did not vary greatly in this study. West Ottawa High School students met with teachers twice per week, whereas Traverse City West students and teachers met three times per week face-to-face. There were several teachers who chose to meet more frequently at the beginning of the trimester and then again towards the end of the trimester. Altering the meeting frequency was done to support student understanding and knowledge of course content and expectations. One teacher reported;

I required students to meet every day during first two weeks of the trimester because you may have to decide on the blended part. I've seen in college where they do it even on an online course; they want every student to come in for the first day for an orientation or something because it is getting that sense of the temperature of what the group is like.

While the time and frequency of class meeting dates was a concern for many of the teachers, West Ottawa and Traverse City West teachers commented and discussed

some of the organizational aspects of the blended course. Three teachers stated that the

blended course management software application assisted in their organization of

assignments and grading. Another teacher suggested:

> A huge advantage is you spend a lot less time and money copying things. For
> example, I might have to grade an assignment and it's posted online, and then the
> kids do it and I teach blended class again, the same assignment is already there.
> It's already posted on line, I don't print things out, and kids don't print things out.
> So many assignments they can just open, read it, do the assignment, upload turn
> in assignment, I grade it online so none of us have to print anything. I don't have
> to scramble around and wonder where my copy is now.

Besides saving copies, teachers stated that the digital signature and time stamp when

assignments were uploaded to the "in basket" saved teachers some anxiety about late

work:

> There is a perfect trail of evidence, if the kid says they posted it and you say no
> you didn't, you can look. There is a perfect paper trail. No lost assignments.

> All of the teacher participants used the same course management system offered

by their respective districts. Moodle is used by many school districts because it is "open

source software." All of the blended teachers in this study had previous experience with

Moodle course management software prior to teaching in a blended format. The

familiarity and training on Moodle supported teachers' managerial role in the blended

course. One teacher stated:

I like Moodle a lot; it's user friendly. I've seen *Blackboard* before, and I don't

like that at all. This is much easier to use. Most of the features I like and use –

not all of them – there's a couple I don't care for. But most of the features are

easy to use. Once you learn it, it's not a big deal; it just becomes second nature. I

want to do this; click, click, click, I know right what to do. So Moodle's been

great.

The managerial role a teacher assumes in a blended setting has several characteristics

teachers may not be aware of but readily adopt. Teachers in this study willingly assumed

this role along with additional technical responsibilities as described in the next section.

Technological Role

Described by Picciano and Dziuban (2007), the technological role is simply the

teacher using or implementing technology in the class or assisting the students with the

technology. Responses from teachers were organized into three areas: technology

expertise, technology dependability, and technology access. Responses were organized

this way to assist the researcher to understand how technology impacted decisions

teachers were required to make while teaching in a blended course.

All teachers stated that their use of technology in the blended course required

them to expand their knowledge of the tools and uses of technology. For example, one

teacher shared in a focused interview that some of the issues he was dealing with were

simply "just understanding the technology myself." He went on to explain:

For example, with the anatomy class, I had the kids doing a lot of charting, so they would have to go find lists of bones associated with the arms. A lot of times they'd find a list and copy and paste it into their Moodle. There were a lot of issues with the copy and paste function, where there would be hidden characters or something if it was in html on a website, and it would copy it as html. Then when the kids pasted it into a regular text window, it would show up as html. So, we had to learn how to make sure stuff didn't show up in code – just a lot of little inconsistencies. If the kid is posting an image, one type of image you can post in this format, and another type of image you have to go through a different process in order to get the image to actually show up.

Study participants said they had to assume a "trouble-shooting role" as the teacher. One teacher stated that this was a difficult role since she was "getting accustomed to Moodle" and then stated, "There were so many different things you could do (with Moodle), so that role was probably the biggest struggle." Although the role of "technology troubleshooter" was uncomfortable for some of the teacher participants, others actively anticipated technological issues that might arise in the course and attempted to address them with the course participants. One teacher used the anticipated technology issues to outline for her students how they might avoid the problems that technology could present in the course:

I made sure that they had *Open Office* available to them; they could download that for free at home. I also made sure that they knew all about *Google Docs* and that was free at home. And I explained to them in here we had *Microsoft Office*,

which was 2003; they were more than welcome to use that, but I taught them how to do the enriched text format saving so they could move back and forth between *Open Office* and the Microsoft program. Other than that, I think we did really well. You just had to get that foundation down, but then we were ok.

Teachers discussed in the focused interview that they had *volunteered* to become a blended teacher at their respective high school. Most of the study's teacher participants were highly motivated to incorporate technology in their instruction. Therefore, many teachers felt accomplished and comfortable to support students with the technology issues the blended course required. Several felt it important to orient students about the technology and software they would be accessing during the course. One teacher shared:

The first two days in class, we met in the computer lab with the projector so I could log in and show them how to use all the different features and make sure they could do them when I was still there. I had very short assignments; they had to do a journal, they had to contribute on a forum, they had to submit an assignment just so they could see what the assignments all looked like and see how the process worked. So, that helped eliminate lots of emails and questions like I had the first time I taught a blended class. Questions then were: How do you do this again? Where this is, and how do you do that? – because some of it is new to them. So I would say for anyone who is about to do this, you want, if possible, to meet in a place where everyone's on the computer at the same time trying things out. But the biggest thing to prevent with those types of problems is to explain it all in the beginning and help them with questions.

A second teacher reported that before teaching a blended class the teacher should "use it for a while first with your normal traditional classes." She further stated that this use of technology in the traditional classes would support the transition to becoming an online teacher:

> Practice it first in your traditional class and then go through the training that our district lines up for you to actually learn to be an online teacher. Because it's one thing to know how to use the technology and it's another thing being the online teacher.

The general agreement among the teacher participants in the study was "if they're not comfortable with technology themselves then it is going to be very hard for them to get students comfortable with it." Alternatively, there were no student responses (n= 129) in the student survey that indicated they (students) had any difficulty with the course management (Moodle) application.

While half of the teachers in the study expressed some concern over their role as a "technology troubleshooter," in the focused interviews, others commented and stated concern over the dependability of the technology to support a blended course format. Teachers specified the biggest issue of dependability of technology was concerned with Moodle. One teacher shared that when the technology and/or Moodle was not working, it has a big impact on the progress students could make in the blended course.

> The biggest issue is when Moodle isn't working. Especially last year we had a couple of instances when Moodle was down at night for three or four hours at a

time and they [students] do all their work at night at home. Many of them are up until midnight, one, and two in the morning doing the work. Because teenagers, that's when they're most awake is like at midnight. So that was so frustrating when they would come in the next day and say we couldn't work last night, it was down. That got remedied; it's better this year. But that's been the biggest issue.

A final area of concern about dependability of the technology expressed by the teachers was concerned with *open source software* that districts used because of the savings in cost for licenses. Two teachers commented, "They [the open source software programs] are not as powerful and there were often formatting problems." One teacher specifically commented, "*Google Docs* is not a comfortable program for me and neither is *Open Office*, and so that wasn't always the best."

In the West Ottawa district, each teacher knew the name of the technology support specialist they could call or email for help they needed. They stated there were plenty of resources, including Moodle handbooks and colleagues who are currently teaching or have previously taught blended courses.

Teacher participants expressed concern about students' access to technology. Concerns about compatibility with school computers and the course management application were mentioned by four teachers. For instance, a challenge is "that students have technology that is incompatible with our district." However, one teacher stated, "But I've found adaptors, so I can open anything. Sometimes, students originally couldn't … open files, and I helped them all get a free program in every case where they could open anything."

Many of the more experienced blended teachers expressed similar comments. Stated by a teacher at Traverse City West Senior High School:

You want to make sure you use technology the majority of your kids have access to. … but, yeah, they [teachers] should be willing to accept different file formats or be up front with students about problems they[students] may encounter if they're not use to viewing such things.

Another important insight that surfaced was specifically related to access to computers at school during the school day. One teacher reported the advantage she had over her colleagues while teaching the blended course: "My advantage was that I had computers in my classroom, but I could see from other teachers out there would be an access issue because of the laptop carts and stuff - availability. Availability, scheduling and logistics ends up being a really big issue." Even with access each day in her classroom, the same teacher expressed that "a couple times there would be delays or access to the Internet was not available," so she helped students "prepare for just about every emergency" so that issues of access do not hinder face-to-face time with students.

Students as Blended Learners

Each instructor of a blended course administered an online, end-of-course survey. Instructors provided the link to the survey through their course site on Moodle where the survey was administered in multiple ways. Some teachers requested students to participate and then provided the online link on their course home page. Three teachers provided incentives to students by giving students extra credit for completion of the survey. Three teachers, whose classrooms were equipped with enough computers for

each student in the blended course, required students to complete the survey during a face-to-face class.

Although survey responses were not received from every student enrolled in the blended courses in this study, the response was large enough to provide a reliable sample (n=145). The survey questions were developed using *Flashlight Online,* a non-profit survey bank (Picciano & Dziuban, 2007). The questions were generated to measure student attitude about interaction and their blended learning experience.

Student Satisfaction

The survey results supported student participation in a blended course. Figure 2 shows that a large majority of the students enjoyed the blended course experience. A similarly strong response shown in Figure 3 indicated that teachers used a variety of teaching strategies in the blended format of the course.
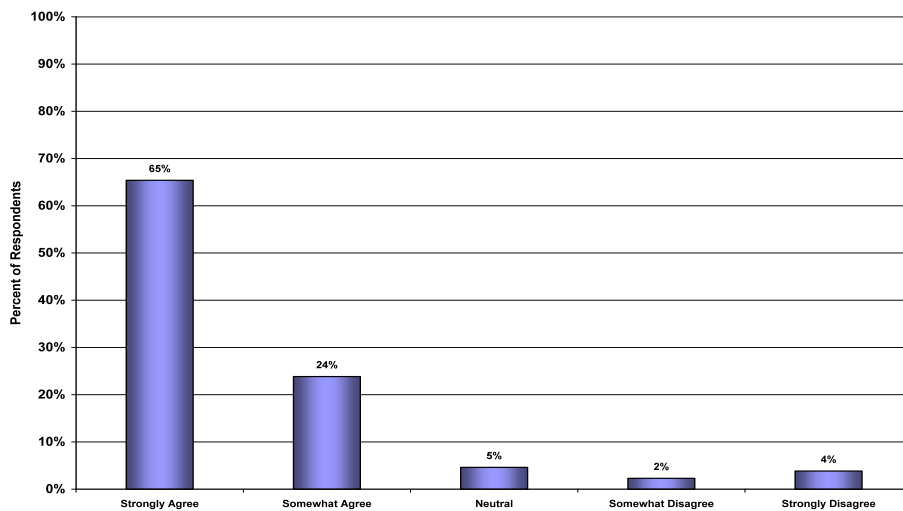
Figure 2.   Percent of students who enjoyed the blended course experience.
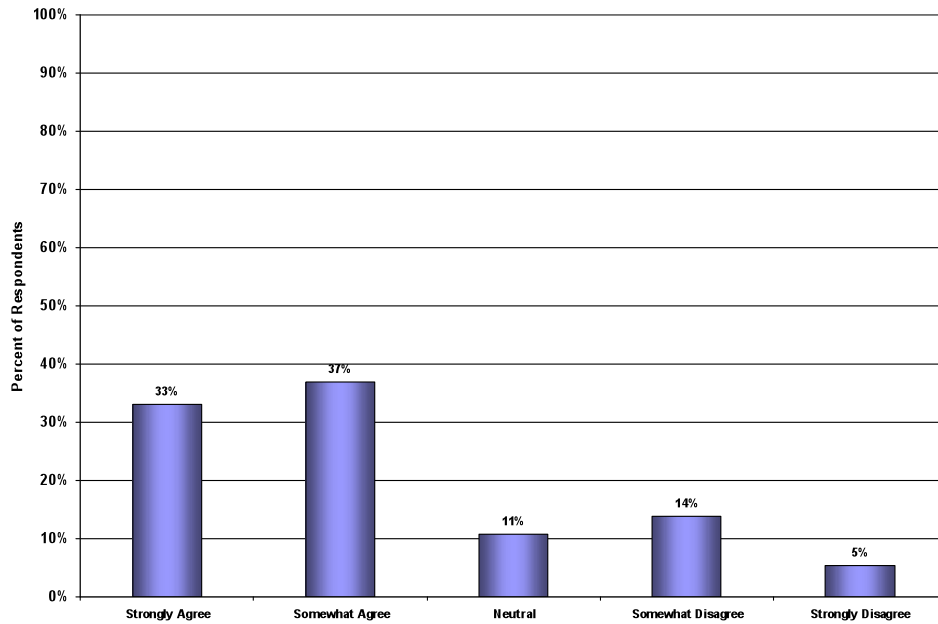
Figure 3. Teachers used a variety of teaching strategies in the blended course.

Figures 4through 6 provide graphic evidence of student responses. They generally agree that online activities offer learning opportunities that are different from those in traditional classrooms. Further, they firmly disagree that time online would be better spent in the classroom, and they are adamant in their opinions that other students should have the opportunity to take a blended course.
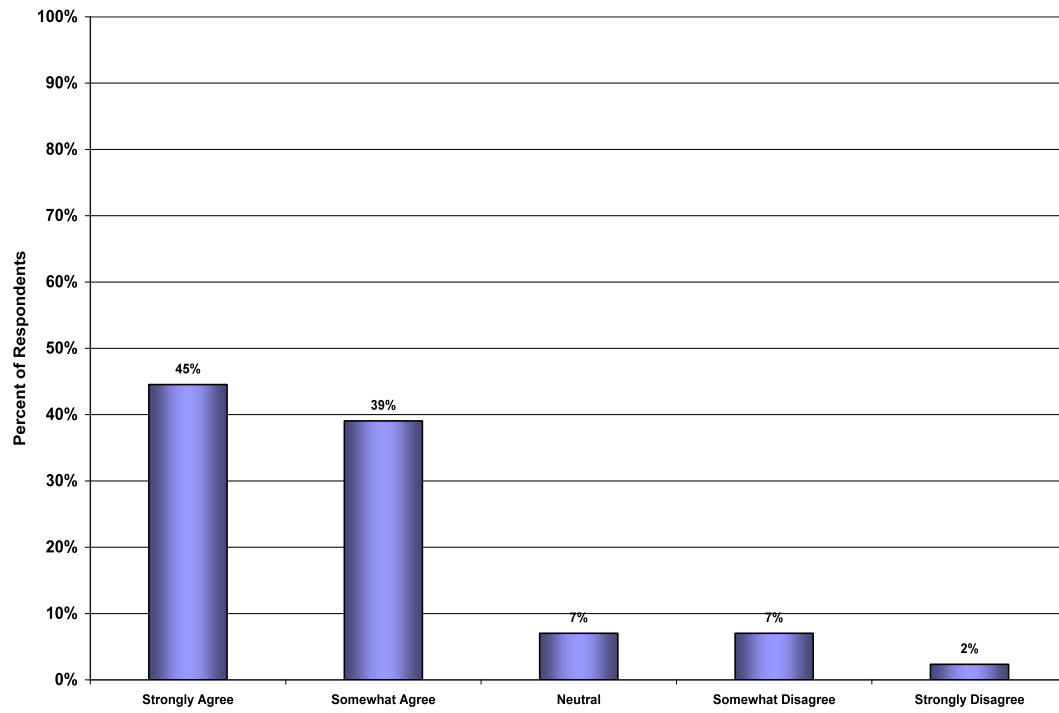
Figure 4. Online activities offer different ways to learn.
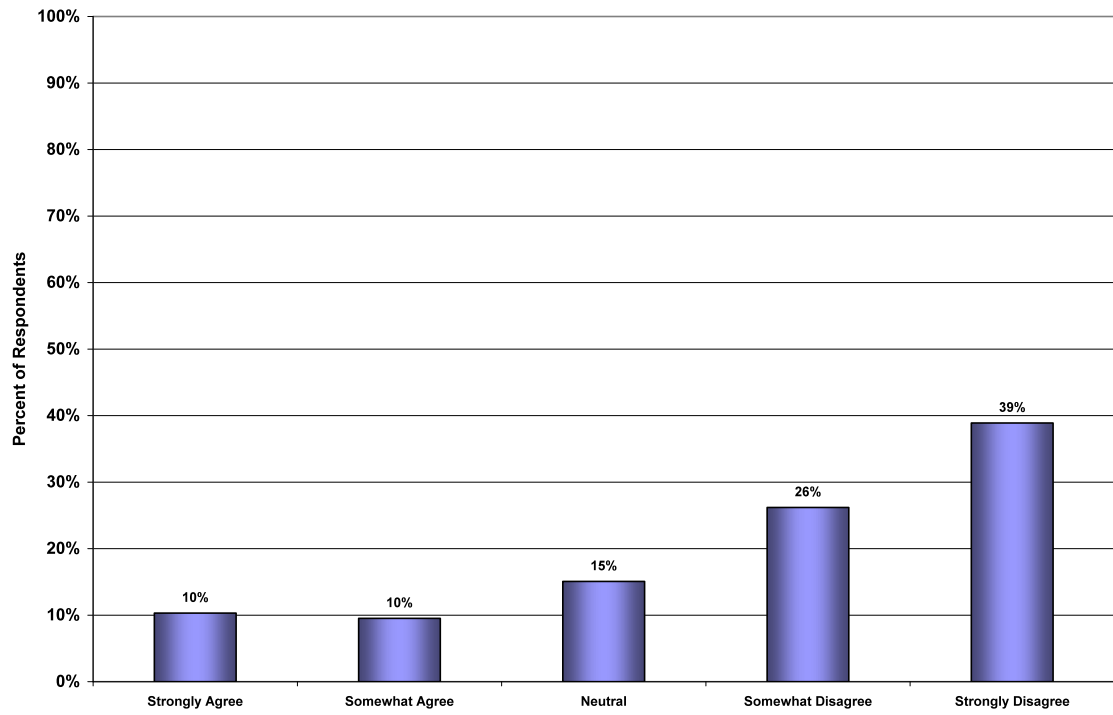
Figure 5. Time online would be better spent in the classroom.
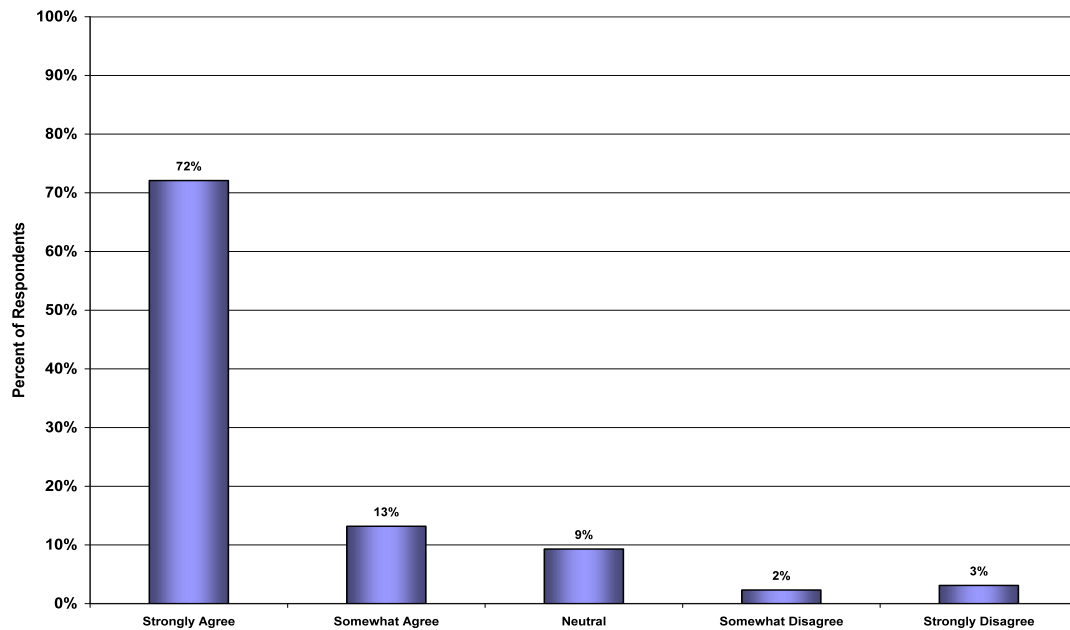
Figure 6. Other students should have the opportunity to take a blended class.

Students were also asked to respond to an open-ended question: "What do you like most about participating in a blended course?" Student responses were coded to reflect categories of response: pace, flexibility, and rigor. The category of pace referred to students' opinions about the importance of working at their own pace in the course. Flexibility referred to comments about the difference of blended course from traditional course structure, and rigor referred to the challenge and difficulty of the course. Of the forty comments provided by students, twenty-six comments were related to flexibility. The following illustrates some of the comments made by students:

- I liked that it was a flexible class that let me work with my own schedule.

- I liked being able to sleep in and not have class every day.

- I enjoyed the flexibility of the work we did.

- I did not have to follow a somewhat strict schedule.

- I liked not having class as much because it gave me more opportunity to learn by myself

- I really enjoyed that we had independent study and work.

- I liked being able to judge my time and be responsible about what I did. It taught me not to procrastinate so much.

Many other students' comments discussed *pace*:

- It let me work at my own pace.

- I liked being able to work at my own pace and getting stuff done from my house.

- I like not having to go to class on some days and the fact that you could work at your own pace.

- I could set my own pace for homework, because it wasn't always due the next day. Also, I could finish something online in twenty minutes that might take a whole class period to do otherwise. It is a more efficient use of my time, basically.

Two of the forty comments made by students described rigor. Students stated they liked the blended course because "I felt I was pushed hard to work harder in my online course" and "It was a good precursor to college courses." Other student comments included the following:

We could still contact our teacher (through Moodle) if we had questions.

That we had independent time on our own and that during classroom time the teacher didn't lecture as much and let us get right to work.

Students were also asked to respond to the open-ended question; "What did you find most difficult or challenging about the blended course (part online and part in the classroom)?" Some of the comments made by the students were categorized as "time management." These comments reflected student's difficulty with time and course requirements. Examples of comments made by students were the following:

It was easier to procrastinate on homework in this class than others; you have to stay on task when you are online; remembering to check moodle each night for new assignments; it takes your personal time when doing the work online; I tended to procrastinate and I get distracted when I am online.

Other comments were categorized as "understanding." This category reflected student's difficulty learning the material in the blended course. Comments made by students stated they did "not fully understand what I had to do." One student wrote, "What I found most difficult was teaching myself the material and some things are harder to understand on your own." Another comment suggested the course was difficult because the student did "not have as much guidance on certain things."

Some comments by students also suggested that communication was not efficient. Students made comments like "contact with the teacher was difficult," or "we had less contact with the teacher and if you had a question it would take more time to get the answer back," and "I didn't have enough time to conference with the teacher. I would

find myself coming in on days I didn't have class to ask questions and see if I could get help."

Two students said it was difficult when the technology was not working properly. One student stated, "The only difficult part was when the technology failed, like when Moodle crashes or my home computer cannot support a file type." The second student wrote, "At first I wasn't used to looking at Moodle for everything, but eventually I got used to it. I had a difficult time finding assignments online."

The final open-ended response question asked "how would you improve this class?" Student's responses were categorized into five categories: "no change, face-to-face, communication, instruction, and technology." No one category compiled significantly more responses than the others. Five students commented that they would not change any aspect of the blended course they experienced. Seven students commented they would change the face-to-face component of the course. One student stated, "Having three face to face days instead of just two. I think that would have helped me out more since you've got one extra day to interact with the teacher and other students." Other students made similar comments:

> I would have the class have more times to ask the teacher questions and get help from the teacher; a few more days in class, so that the class isn't so rushed; this course was challenging with less face-to-face time; maybe have three days in class instead of two so that we could cover the material better.

Students also provided several responses that indicated they would like the communication related to the course to improve:

To have the teacher answer questions, maybe have an open forum that the students can ask questions to each other and the teacher would be in the conversations if the students really got stuck; somehow have more interaction with the teacher. I felt it was hard to understand what the teacher wanted by the online postings; have more interaction with the teacher on the computer; for this particular course, it was difficult to get through to the teacher when I was home. I tried to email several times and never got a reply the entire trimester. If a course is going to be part online, the teacher has to check their email and respond to them every day otherwise assignments tend to be harder than they need to be; maybe having a virtual lecture where everyone is online asking questions right to the teacher instead of just emailing the questions and having to read the answer before class the next day.

Students also made a number of remarks about improving instruction for the course. One student stated, "I would prepare teachers for instruction of a blended course. They are not ready to work with students online and are testing various teaching methods out during class; resulting in good, bad and in between test scores." Other responses from students said that students "should have more self led notes and less teacher led notes (we take notes of our own from the teachers' *PowerPoints*)."

Students also pointed out that there were technology issues that if addressed could improve the course. One student stated that the course "should use a more efficient program than Moodle." Another student stated that the features of the course

management system (Moodle) should be utilized more effectively by having "a calendar and put the dates on it so they're not so easy to overlook."

The results of the student survey pointed out some concerns and comments for improvement. However, the data still indicated that there is support for introducing blended learning in the high school setting.

Interaction

Interaction is the key component and a quality learning experience indicator in an engaged educational setting (Owston, Garrison, & Cook, 2006). Wagner (2006) stated that interaction continues to be the defining characteristic for quality and importance in online learning. He further stated that as more distributed and collaborative models of learning emerge, it becomes even more critical that interaction be a critical component of learning.

A major theme that emerged from the data collected in this study revealed that interaction was something that teachers and students noticed throughout the course. Teachers described several areas of benefit and concern related to interaction in the blended course format. Data from the focused interviews and teacher narratives supported the hypothesis that blended courses require different interaction than the traditional face-to-face courses. Six of the eight teachers in the study mentioned the importance that online interaction played in course communication among students and between students and teacher. "I noticed that some kids who may struggle in a face-to-face class were very confident contributors to the online learning. They seemed more confident with a computer to hide behind."

Another teacher stated that "When they were online, every student responded and I had a chance to personally interact with each student and email back and forth with each student, so I was able to incorporate more, I would say 100% responses rather than maybe just a few each day like a traditional classroom. And I really liked that."

Teachers also stated that the social networking aspect of the blended course also helped teachers get to know their students another way because they did so much writing. "They contacted me more via email or messenger or whatever than my normal kids will do. And I just feel like there was more of a trust created because you have to trust each other in that type of environment. I knew my blended kids better than I knew my face-to-face kids."

One teacher also stated, "Many students who do not speak up in the face-to-face class are more likely to assert their opinion in the online environment." One teacher concluded that the blended format "supports a community of learners since online equals more contribution and confidence of some students." Three West Ottawa teachers also cited the format of the course increased the amount of reading and writing by students through the use of journals, wikis, and forums. Greater emphasis on reading and writing seemed to elicit "more willing participation due to the type of medium used to interact." Teachers also reported that from a "communication standpoint, the forums and journals require writing and have more accountability for students."

However, teachers and students also stated that the asynchronous nature of the interaction in the courses limited some aspects of interaction between teacher and student and between student and student. Several teachers and students said, "Communication is

more instantaneous in the face-to-face class." One teacher suggested that this is a very valuable aspect of face-to-face because it "allows me to shape the direction of the discussion. Some of my students do not pay attention to my online comments." Additionally, a second teacher stated that "less face-to-face time means less relationship building, which is a concern." Another teacher acknowledged that "the forums and journals do not provide tone, inflection, and body language in a response or discussion." Another teacher described the interaction among teacher and student this way:

> The face-to-face is really important to me because I think it's really important to get to know your students and for them to know you and to understand your expectations, and you know what they can and cannot do. And then, when the days are online, what I like about that is that it teaches them to be independent and to be self-disciplined, which is really important. And then I feel that they respond maybe a little more honestly when there isn't peer pressure. They know that I'm going to be reading but nobody else will.

Measurement of student interaction was also calculated by student login to the course website (Moodle) and participation in online course discussion threads. These were considered hits. Hits would include the total number of times a student logged into the course shell or participated in discussion threads (forums) while logged in the course management software. Content analysis of student online responses on the course management software was also analyzed. The written responses from students were assigned a score of one (weak) to four (strong) using the simple rubric described in Chapter 3.

Students were required by their teachers to use their course Moodle site to *view* and *post*. Students viewed or posted to the course Moodle site depending on the required activities designed by the teacher for the online portion of the course. The view activity by a student or teacher could be one of several view activities. (See Appendix D for a listing of activities in which students and teachers might be engaged.)

As written, the *views* by students and teachers required reading and observation by the person viewing. Figure 7, a combined total of all views by all students (n=188) and instructors (n=8), illustrates the teacher and student views during the course of the study. Students had significantly more views during the course of the study than their teachers. However, the ratio of teachers to students in the study was approximately one teacher to twenty-three and a half students. Student views during a one-trimester course totaled 80,428. The average student viewed the contents of their course 428 times. Teachers, however, viewed their course site an average of 1504 times during the course of a trimester, indicating that teachers, on average, viewed the course site over three times more than their students, which may be attributed to several differences between student and teacher responsibilities for the course. Views did not require the student or teacher to respond to asynchronous discussions on the course site.

	Month1	Month 2	Month 3
Teacher Views	4197	3,926	3,905
Student Views	26,387	29,713	24,328
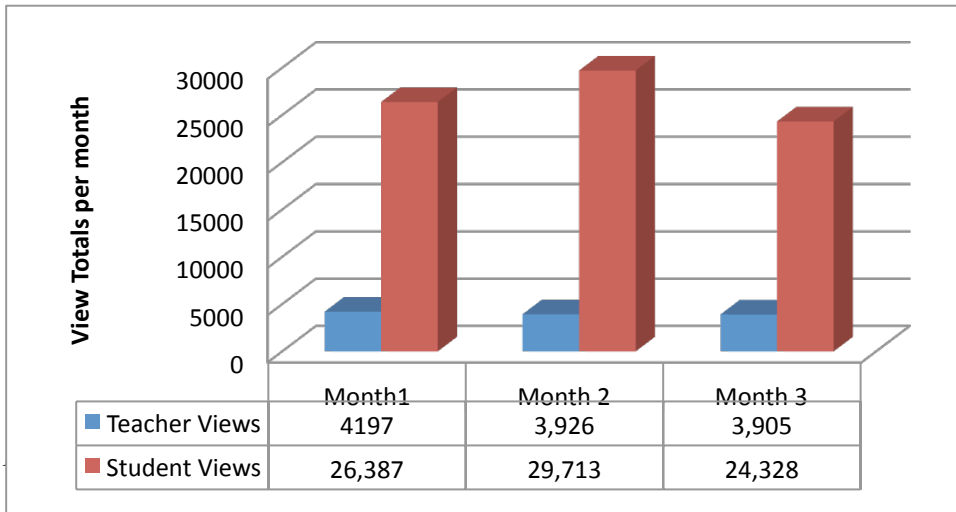
Students and teachers also posted to the course website. The post activity required students and teachers in the blended course to interact with each other and the content of the course through reading, writing, and tasks as assigned by the teacher of each course. Different classifications of *post* activity for the course Moodle sites in this study can be reviewed in Appendix F.

Figure 8 illustrates the total of all posts by teachers (n=8) and students (n=188) during the course of the study. Students had significantly more post activity during the course of this study than their teachers. The ratio of teachers to students in the study was approximately one teacher to twenty-three point five (1:23.5) students. Total student posts during this study were 10,736. The average number of posts for each student during a one-trimester course was fifty-seven. Teachers, however, posted to their course site an average of 486.3 times during the course of a trimester, an estimated eight and a half times more than their students. Posts did require the student or teacher to interact with material or asynchronous discussions on the course site.

	Month1	Month 2	Month 3
■ Teacher Posts	1417	1,227	1,246
■ Student Posts	3,483	4,051	3,202
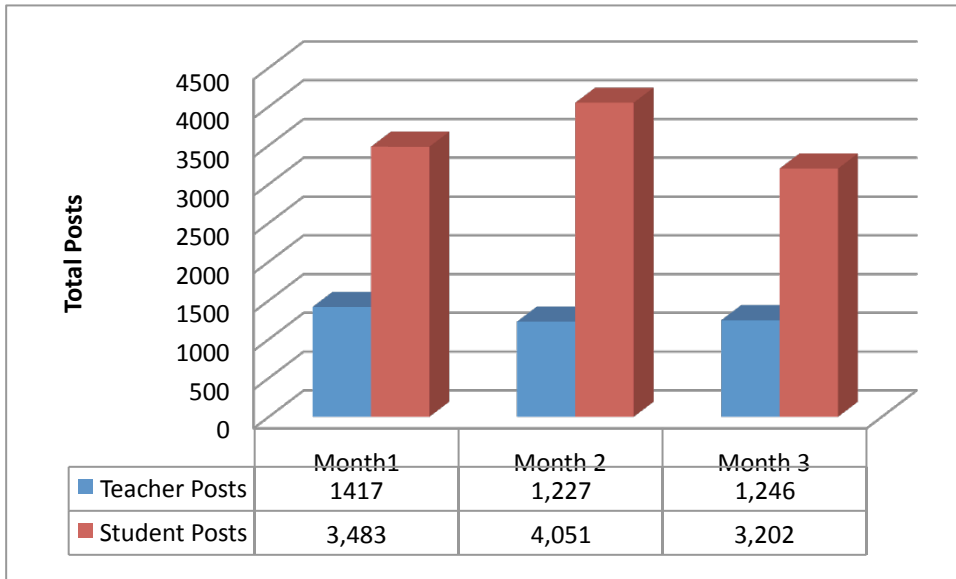
Figure 8. Student and teacher *posts* on all course website.

Student posts were also evaluated for the relative strength of the student post in terms of competency. Analyses of student posts in discussion forums or journal entries using the rubric described in Chapter 3 revealed that student posts were nearly always (98%) focused on the topic, with a few exceptions where students were not insightful or focused, and student posts met the criteria of the *strong* or *good* category. However, students did not always post comments that demonstrated understanding. Students' development of the topic or discussion fell into categories labeled four, three, or two, with a few students showing weak development of the topic–lacks evidence, details, examples, and explanations.

Table 6 shows the frequency and percentage of *hits* that occurred in the course areas by students over the eight blended courses in the study. Sixty-three percent of "hits" were in the course main communication area. The asterisk in Table 6 indicates view and post functions that were used by some instructors' sites but not all. Many instructors used different features of the Moodle course tools, often depending on their subject area.

Table 6

Total Hits for Blended Courses

Course Areas	Hits	Percentage
Main Communication Area		
• Chat/view /talk*	595	<1
• Wiki/view/edit*	1,173	1.2
• Choice/choose view*	273	<1
• Blog view*	28	<1
• Forum view discussion	16,486	17.6
• Forum post	1,433	1.5
• Quiz view*	1,482	1.5
• Quiz attempt*	5,077	5.4
• Glossary view*	2,816	3
• Glossary add/entry*	345	<1
• Journal view*	3,422	3.6
• Journal entry*	757	<1
• Assignment view	15,616	16.7
• Resource view	9,162	9.8
Total	58,665	63
Main Course Areas	Hits	Percentage
• User view	1,965	2
• Course view	26,880	28.7
Total	28,845	31
Course Tools		
Assignment upload/submission	6014	6
Total	93,524	

The hits tallied in the main course areas in Table 6 have two types of student activity: user view and course view. User view allows the student to login to the site and view classmate activity or profiles on the site. Course view occurs when students log in to the course. Twenty-eight percent of student hits to all courses were for either the user or course view. The vast majority of these hits (93%) were in the course view function. These results are not surprising because many students logged-in beginning with the course homepage and then navigated away from the home page.

Approximately 18% of hits were student views of the discussion/forum function, although only about 2% of hits were actual forum entries by students. Students' views of forums were more than ten times greater than their actual forum entries.

One West Ottawa teacher said that early in the course he observed that student forum posts "seemed to have ideas that had been used and repeated by other students in the forums." The teacher became aware that the journal tool on the Moodle site would not allow students to view each other's entries until each individual student had made his or her own original entry. The journal view and entry hit ratio is much lower than the forum view and entry ratio (approximately 4% : <1%). The teacher thought the "journal function required students to know and understand the material more thoroughly and therefore be able to post a journal entry that consisted of their own thinking in the journal entry response."

Students were asked to rate the "quality of interactions with their teacher." As shown in Figure 9, the majority of students (87%) rated the quality of their interaction either the same as or of higher quality than in the traditional face-to-face course.
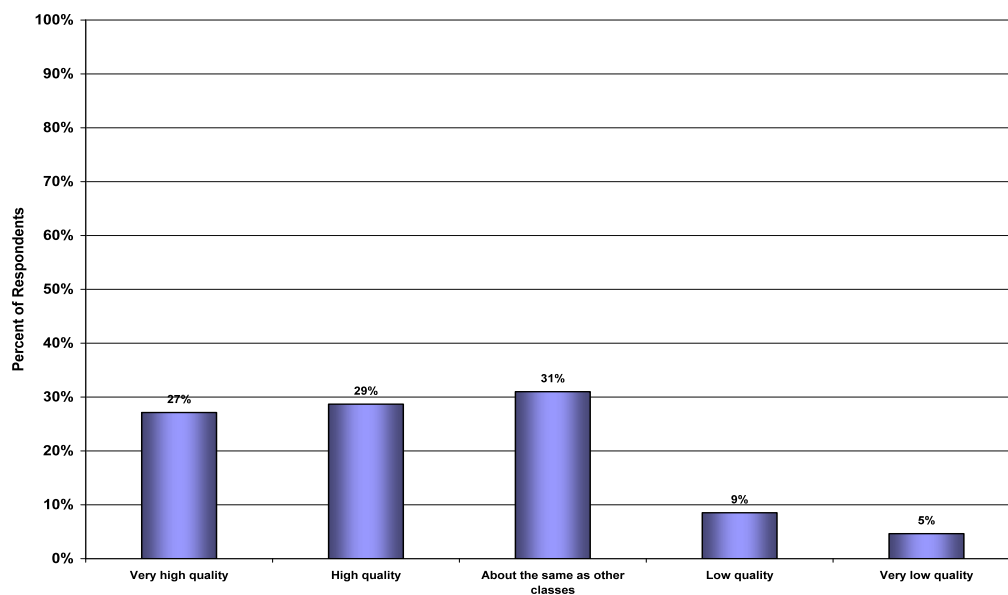
Figure 9. Quality of interaction with teacher.

However, as shown in Figure 10, students also indicated in the end of course survey response that their peer-to-peer interaction in the blended course was the same (34%) as a traditional course or of poorer quality than the traditional course they had previously experienced (49%). Explanation for this response by students could be related to the decrease in face-to-face time in the blended courses and the type of activity that occurred in the classrooms during face-to-face class time. The majority of activity during face-to-face time was teacher-directed activity, as evidenced by the researcher's direct classroom observations.
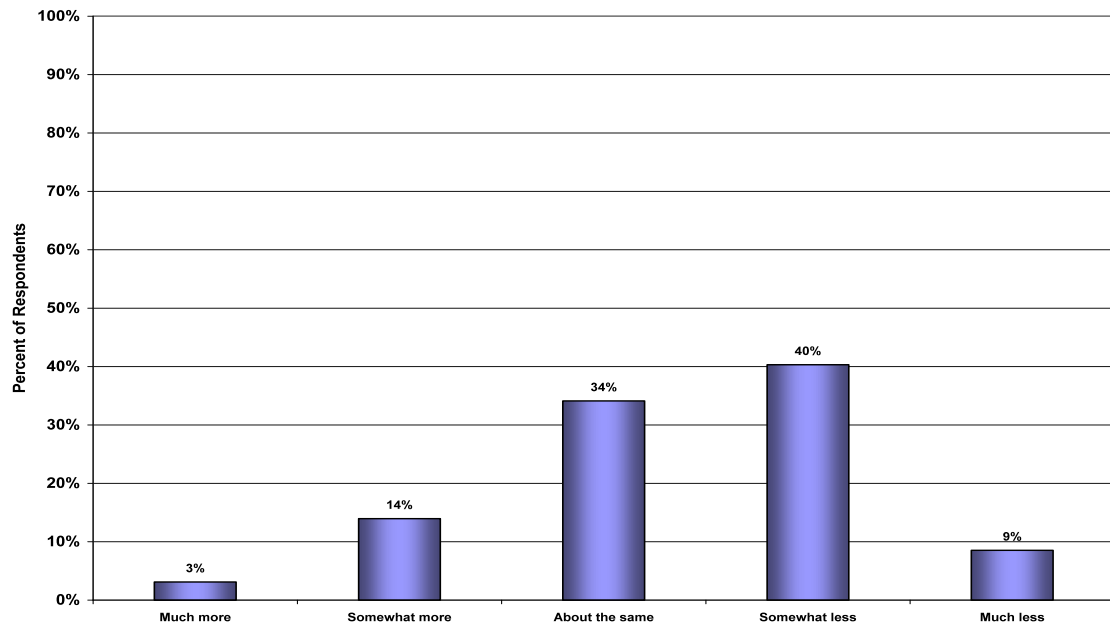
Figure 10. Amount of interaction (online and face-to-face) with other students in class, compared to a traditional course.

Interaction by students and teachers in this study emphasized that the type of interaction between students and teachers is "different." Students are required to use face-to-face interaction on class meeting days, but they were also required to use digital interaction through the course management system. Teachers indicated that although communication and interaction were different from traditional face-to-face courses, the "forums and journals require writing and there is accountability." Nevertheless, teachers and students also stated that a reduced amount of face-to-face time meant "less spontaneous interaction." This lessening could be due to the decrease in face-to-face time in the classroom. One teacher reflected that "student response and interaction online can be greater and a surprise to the teacher." Seven of the eight teachers also stated that the

blended format supports *digital natives* (Prensky, 2010) for relevance, rigor, and an enriched communication for students. While students did not attend class in the face-to-face setting five days per week, as in a traditional classroom setting, all teachers did designate the online days as "drop-in time." Students could get extra academic support from their teacher. This type of small group or one-to-one interaction may have supported students' progress in the blended courses, although four teachers stated that few students took advantage of this opportunity.

The data indicated that interaction is an important component of the blended course, as confirmed by the instructors and students. Interaction strategies developed and used by teachers may help advance relevancy for student learning. Yet teachers continue to have concerns regarding reduced face-to-face time and synchronous interaction between students and teacher and student-to-student.

Grade Distribution

Student grades in each section of the blended courses indicated that students did well academically with the blended format. As shown in Figure 11, a grade of A was designated in 62 of the 188 grades in all eight sections of the blended courses at both high schools. Further, 27 grades of A- were assigned to students across all blended courses in the study. Thus, nearly half (47%) of all grades assigned by the blended instructors were either A or A-. About one in ten students received either a letter grade of B (11%) or C (9%). Only 2% of all students enrolled received a failing grade of F. The grade distribution indicated that although many instructors shared concerns about students' time management skills and ability to handle the rigor and self-discipline required in the

blended courses, a large majority of students (n=156, 83%) received a C or better grade for course completion. This finding supports a conclusion that students are demonstrating enough of an understanding of course content to complete assigned tasks and receive *good grades*.

	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
total	62	27	9	21	11	9	17	11	4	7	6	4
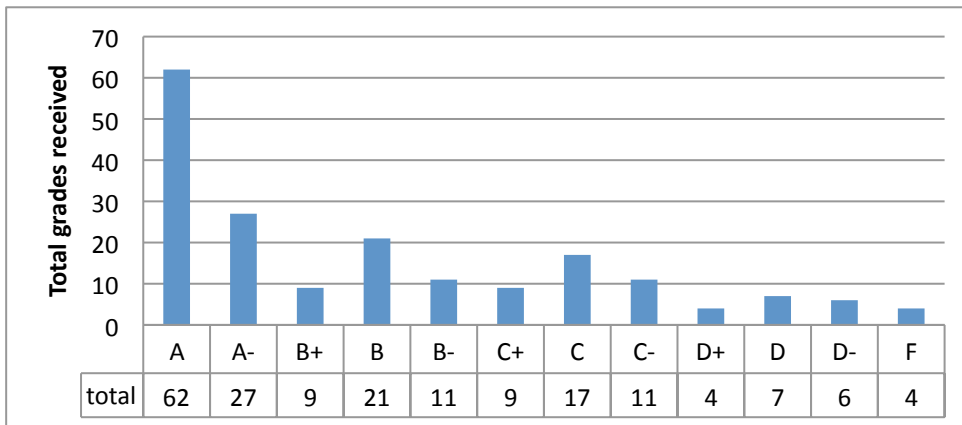
Figure 11. Grade distribution for all courses combined.

Preparation for Implementation

The data from teacher narrative, teacher focus interviews, and student surveys pointed to several considerations that practitioners, principals, and central office administrators should bear in mind when they embark on this instructional format: teacher training, administrative support, and the provision of time so that teachers can properly design the course.

Teaching

All teachers in the study remarked that the shift in delivery of the curriculum brought several changes they observed in their instruction. One teacher said "I feel like a curriculum developer because it is a different way of teaching. Same curriculum, I guess, but such a total different way of delivering it. It felt like a new curriculum."

West Ottawa and Traverse City West teachers stated that shifting more toward a student-centered approach requires that teachers have to "be comfortable with that." The shift towards a student-centered approach also required teachers to think deeply about the assignments and requirements in the course since students needed to "be more self-disciplined and take greater ownership of their learning." Another teacher stated:

> They're moving away from control itself that a teacher feels, and the student feels that. You almost feel like, in the time you have in the classroom, you want to make sure that is quality time, but you also want the time they work on their own to be quality time also. You almost feel like you're seriously concentrating, okay this better not be busy work, and trying to find ways, and say, what is the purpose of this, what is the purpose of that – and it really makes you think ahead. Sometimes we're thinking about it in the middle of the process. With this, you're always thinking way ahead and looking at the benefit, and that has really helped me because I honestly believe, we went with blocks and trimesters and all this other kind of stuff and everyone said you're going to cut back on instruction and that's not true. I think we have improved on the quality of instruction itself and blended has allowed me to do that. It really made me look at what am I trying to

teach here, what is the purpose of this whole thing here. And I have to admit, I hadn't looked at that in a long time.

Learner-centered instruction requires that the teacher give students some control over their learning (Picciano & Dziuban, 2007). Instructors in this study indicated that this did occur, but they also remarked on the change in the student-teacher relationship. One teacher commented, "You get to know your students in a different light. They contacted me way more via email or messenger than my normal kids would do, and I feel there was more of a trust created because you have to trust each other in that environment.''

Another teacher said that one of the benefits to the teacher-student relationship was that she could "know every student better," because every student was required to respond to the questions and threaded discussion posted by the teacher online. "I knew my blended kids way better than I knew my face-to-face kids." Additionally, teachers indicated that the format of the blended course permitted far more interaction with students in small groups or one-to-one. One teacher commented that "when we were not meeting, I would typically have two to three students in class working on things, or they are down in the computer lab popping in at any time, or I would wander down there." However, several students responded in the end-of-course survey that they used the online days to "sleep in or work at my own pace."

Teachers shared several concerns and challenges about teaching a blended course. Many of the most common responses gravitated around time and feedback. In terms of time, teachers stated that it was a concern keeping up with the grading:

The challenges are, well, one I haven't said yet is keeping up on the grading.

Because if you let yourself fall behind on grading, those activities the kids are

doing does have a negative impact on their discussions, because they know you're

not watching it, they know you're not keeping an eye on it. And you don't know

what's going on, if they're on the right track or not, so honestly, that has been one

of the biggest things. You have to keep up in that; you cannot let yourself fall

behind.

Seven of the teachers commented that responding or grading forums, journals, or

presentations that students posted online did require additional time; yet it also helped

them draw conclusions about student responses. One teacher stated:

Since they turn it in online, the ownership is on them to go back and look and see

what comment I'm making, versus in class, if they turn in the paper, I write on the

paper and I can hand it back and I know they see it. So I have a sneaky suspicion

lots of kids aren't going back and looking and seeing what they missed and say

well, I have 8 out of 10, I don't care. So from a teaching perspective, it bothers

me that they miss a point on something but they don't bother to go and do it.

However, a different teacher pointed out that if she "gave them more to do and

they had more responses, then we would accomplish more. But that is not what

happened. What happened was they had so much to do they didn't take time to respond

thoughtfully." This observation corresponds to the research conducted at the University

of Wisconsin at Madison that identified the phenomenon "course and a half syndrome"

(Picciano & Dziuban, 2007). The few veteran blended teachers in the study stated that

114

this did not appear to be as much of a concern since their experience had already helped in "thinking of new ways of doing something."

Professional Development

West Ottawa High School required each teacher to complete blended instruction training before a teacher could teach their first blended course. All West Ottawa teachers stated that their professional development was important to the success of a blended learning teacher. Teachers remarked several times that the "professional development must be initial and ongoing." One teacher stated the importance of the initial training because "course conversion" and "student experience" in the course were significant elements for success in the blended course. Five teachers also emphasized the importance of ongoing professional development because "it helps teachers remain aware of the current trends and latest applications." One teacher said:

> I guess the biggest thing is the training. To make sure that maybe what you would do before you would do something like that is to connect with teachers who are considered successful blended teachers. Find out what they've learned over time and what they're doing that the kids really like and enjoy about blended education and then what they didn't.

Seven of the eight teachers reported that the professional development and teacher training was a barrier if not provided prior to teaching a blended course. One teacher specifically stated the following about teacher training:

One barrier is teacher training. It would be very difficult for a teacher to be an

effective blended facilitator if they did not participate in some sort of blended

instruction training. Teaching in a blended environment is very different than

teaching in a traditional classroom environment. Teachers must rethink the

learning activities and adapt them to the online environment. Teachers also need

time to set up and organize the course.

Two teachers also commented on the importance of the establishment of a "community

of blended teachers," generating a district or regional "professional learning community"

of blended teachers to mentor and support each other.

I would recommend highly that people who are just starting out with it work with

someone who has done it before. And that is something that amazes me, that

there are individuals that think, ok, I have to do this myself because I have to

create it for myself. You've got to seek out people who have done it.

Each of these ideas for professional development is supported by the literature.

Kaleta et al. (2007) insisted that a faculty development program must stress the value of

creating large blocks of time prior to the start of the course for instructional design.

Technological Applications

The technology and online portion of the blended courses in this study allowed

for limitless access to the course materials and assignments for students. Three teachers

reported that the "Internet, intranet and home computer compatibility" made a difference

in the student experience while enrolled in the blended course. Three of the eight teachers

had computers in their classrooms. Five of the eight teachers in this study stated that computer access during face-to-face class time influenced the selection of activities and planning for face-to-face instruction.

In the teacher narrative responses, teachers also stated the "importance of a strong operating/course management system that was responsive to teacher needs." As stated earlier, "Moodle" was selected by both high schools as the course management software for the blended courses. Moodle supported the incorporation of tools, links, surveys, and applications into the course management site for each teacher. Examples retrieved by the researcher from the blended course sites in this study included the following: "A More Perfect Union" campaign simulation, imported images, articles from primary and secondary source documents, surveys, portable document format documents, links for television episodes, videos, mp3 files, blogs, *PowerPoints*, *Edmodo*, *YouTube,* writing labs, audio lectures via podcast, *KnightCite,* and documents retrieved from the Internet.

One teacher remarked, "The capability of the technology to incorporate these tools and applications assists to provide relevancy for topics covered in a course." A second teacher also stated, "You should use the technology and applications that the majority of your students have access to." A third teacher also mentioned that "You must be comfortable with technology and meet with your technology people to find out what they feel the capabilities of the technology are at your site." Many of the instructors, however, also indicated, "The students will be fine as far as the technology piece goes. It is amazing how tech savvy they are."

Advice for Other Blended Instructors

In data collected from teacher narratives and focused interviews, teachers stated that for successful implementation of blended instruction it was critical that "the district and building administration had the vision and support for success."

Other advice for future blended teachers stated that they should be prepared for frustration and make sure that there is a plan for additional time. It takes more time, especially at the beginning. But they "should still do it, but just go into it with open eyes. That's the most important advice." Teachers reported that others should not teach a blended course unless you enjoy using technology. Teachers also stated that blended instructional practices should incorporate group collaboration into classroom and online instruction. Further recommendations by all teachers suggested that it was very important to become comfortable with the format and tools offered in moodle.

Three teachers described the importance of course explanation and demonstration for students. One teacher stated, "It is critical on the first few days of the course so students understand expectations and see the features of your course site. It is important they understand how to navigate the site."

Further recommendations for future blended teachers included that following statements: always incorporate some kind of response in the online days; utilize Moodle tools as much as possible. Especially the communication and interaction tools; there is a calendar feature they should get to know. Link assignments to that and then they show up in different colors; check the site often; be flexible and know that things are going to go wrong; you're just going to have to adjust or

adapt or improvise. The kids are flexible if you're flexible; and take an online blended course. Experience it as a student before you try to teach it.

Teachers also stated that it was important to have "faith in yourself" and be honest with your students by saying, "I don't know everything." Several common ideas were woven throughout comments expressed by teachers. One idea expressed was that teachers needed time to receive the appropriate training prior to implementation as well as time to design the course and create the course site. A second idea was that teachers evolved in their learning, skills, and comfort with the blended course format. Initially teachers were concerned with guidelines for implementation and the development of the course site, but as their experience increased they began to reflect and implement practices that required a pedagogical shift in design and delivery of course objectives.

Summary

This chapter presented the results from the data collected during the study. In the final chapter, the discussion emphasizes the critical nature of vision and support for blended instruction at the school site with implications of this study's findings for current practitioners and the recommendations for further research.

CHAPTER 5: DISCUSSION AND SUMMARY

This study examined the implementation of blended learning instruction in two comprehensive high schools: West Ottawa High School and Traverse City West High School. Both schools were in their second year of blended instruction implementation; however, specific teachers were teaching a blended course for the first, second, or third time. While both high schools were considered comprehensive in their offerings, there were several distinctions and differences between the two schools. One difference was in the ethnic makeup of the student population. West Ottawa High School had a substantially higher enrollment overall and a higher population of minority students than Traverse City West High School. Demographics for the two high schools are shown in Table 5.

The comprehensive nature of each high school and the progressive approach to educating students are clear advantages for the implementation of blended instruction. In such a setting, it is likely that *early adopters* will be waiting for the opportunity to implement blended instruction. The administrative support and professional development structures at both high schools may have also made the adoption of blended learning easier to implement.

The findings of this study may be used to generate a deeper understanding about the implementation of blended learning instruction at the high school level. The following questions guided this study:

1. How did the design and delivery of the blended learning course impact students and their learning?

2. How did the teacher manage the two learning environments of online and face-to-face?

3. Did the blended learning environment support a community of learning and student-centered approach?

4. How did the use of technology assist in the design, delivery of instruction, and student learning in a blended course?

5. What were the barriers and facilitators to implementation of blended courses in comprehensive high schools?

The data collected in this study were gathered from multiple sources including focused interviews, teacher narratives, direct observations, student surveys, class grade distribution, and student online interaction on each course web site. To ensure the integrity of the data collection process, a series of steps were developed and followed while conducting the study. These steps were described in Chapter 3. The data collected in this study were analyzed through multiple methods and theoretical frameworks, including the model by Bransford entitled *How People Learn* (Bransford, Brown, & Cocking, 2000, 2002), the constructivist teaching framework of Duffy and Cunningham (1996), and the transformational–instructional leadership frameworks of Marks and Printy (2003).

Learning

The examination of the implementation of blended learning instruction in the high school setting has provided this researcher with key insight about the potential benefits and drawbacks of blended instruction. A critical and important insight came from the observation of the pedagogical shift that teachers experienced while becoming blended teachers. Teachers consistently shared that their reflection and thinking about course conversion from the traditional face-to-face course to the blended course was crucial in their redesign for the blended course. One teacher commented,

> What do we want to do? We've got this tool available, but does the end justify the means? We got into debates about whether we were going to just put them in front of a computer and then typing a report was good enough.

The purpose of the blend should be improved pedagogy (Graham & Robinson, 2007). Solomon (2002) also reinforced this idea and stated that with all of the innovation, technological advances, and opportunities, it is the pedagogical way in which the blend is used that makes the difference in student learning. Graham and Robinson (2007) explained that consideration of the nature of the blend clarifies the strengths of both portions of the blended environment. The transforming blend improves pedagogy by moving from information transmission-focused pedagogy to a more active learning pedagogy. The *enabling* blend simply provides more access and convenience for students, whereas the *enhancing* blend is directly related to an increase in teacher and student productivity (2007). This researcher's observations and data collected at each high school led to a conclusion that teachers in this study were thinking about pedagogy.

The nature of the blend forced teachers to consider and resolve, at least in their own mind, how they would decide to solve the issues surrounding blended pedagogy.

> To take an activity you really like in the (traditional) classroom and decide whether to keep this activity is difficult. But how do I make it effective for my online learners? So that took a lot of time and a lot of thinking. It was very challenging because nobody is telling you the best way. There are so many different ways, and you need to read the literature about online learning and best practices. You have to try it, and if it fails, you have to go back and revamp it. That was probably the biggest hurdle to overcome.

Even with the small number of teachers in this study, the researcher could observe the nature of the blend to be different among those teachers participating in the study.

There are several reasons for the differing nature of blends found in this study. One explanation may be the various levels of technology integration used by teachers in the study. Most participating teachers would likely be considered *innovators* or *early adopters*. Innovators and early adopters are those who are active to seek out information about new ideas and are the first to begin bringing an innovation into the mainstream (Rogers, 1995). The researcher observed that all teachers in the study were willing to explore the capabilities of the course management system (Moodle) and the applications or tools that assist in the effectiveness of access and interaction on the course sites. Ideal integration of technology requires that a teacher's design and the selection of activities that engage students in technology-dependent learning should be project-based, use open-ended questions, and require higher-order thinking skills.

Students construct meaning through collaboration with their peers while solving real world problems. Therefore, the early adopters see the potential for blended instruction to be transformational, but recognize that their affinity for technology does not mean the students' experience in their course will be transformational (Kaleta et al., 2007). It is the reflection on the pedagogy (design and delivery) by teachers that has the greatest potential to make the difference as to whether teachers can achieve a transformational blend. Achieving the transformational blend will be where student engagement and learning begin to happen.

One way for blended teachers to accomplish the transformational blend is to consider the implications of the equation "Task = Performance" the task(s) that students can be observed doing in class predict student performance (City et al., p. 30). The authors stated, as an example, that "Memorizing the periodic table is not the same as understanding the properties of the elements" (p. 30). This is one of the areas in which blended teachers struggle, as do their traditional course colleagues. Instruction, teacher thinking, and creation of lessons or units had a significant influence on the type of activities, instruction, and learning that students experienced in this study. Students were exposed to an array of activities from low-level knowledge and application tasks to creation and evaluation activities that required students to think critically. Yet teachers in the study spoke of the importance of improving their instruction and reflecting critically on the areas for improvement. This is a significant finding, because schools that are capable of transformational change are characterized as learning organizations (Senge, 1990).

For the adoption of blended instruction in each of the two high schools in this study, and potentially in other high schools considering blended instruction, it is necessary that the school is a learning organization where the teachers and principals are continuing to build capacity in their teaching craft. Thus, the learning experiences of the students have meaning, relevance, and require critical thinking. "Learning organizations are capable of conceptualizing, growing, and transforming" (Dziuban et al., 2004, p. 266).

Theoretical Implications

The relationship of the current study to theoretical models referenced in this study is essential if this study is to be helpful to others considering the implementation of blended instruction in a high school setting. The theoretical model developed by this researcher in Chapter 2 incorporated aspects of five theoretical models. These models included *How People Learn* proposed by Bransford et al. (2000/2002), constructivism (Duffy & Cunningham, 1996), the Sloan Consortium five pillars of quality online education (Picianno & Dziuban, 2007), transformational – instructional leadership (Marks & Printy, 2003) and the instructional core theoretical model (City et al., 2009).

At the core of the theoretical model, generated (in Chapter 2) by this researcher, is the hypothesis that for student engagement to occur in blended courses, it is necessary for teachers of these courses to consider multiple elements: course design, technology integration, student-centered learning, and contemplation of greater support for individualized instruction. The model in Chapter 2 also asserts that for these ingredients

to be present in the blended course, transformational and instructional leadership must be present to effectively incorporate each ingredient. Then, if this is achieved, students have a greater chance of engaging in the blended class and finding relevance in their blended course experience. Unfortunately, this model did not consider how it will be known whether students are learning or engaged. Neither did the model consider the quality of the learning experiences. The teachers in this study were unaware that most of the identified elements were critical to the success and implementation of blended learning in their classrooms.

Teachers in this study were considered early adopters of the blended instructional approach. Teachers recognized either through design or by discovery that student-centered learning was critical to the success of the blended model.

The findings reported in the literature recommended that before adopting the latest technological innovation, it is better to adopt *grounded instructional practices* in what has been proven to be effective for student learning (Shea, 2007). All of the teachers in this study came from the traditional classroom to teach in a blended environment.

Five teachers in this study shared concerns and questions about the online portion of their course, because teaching strategies online are distinctly different from traditional face-to-face courses (Clark, 2008). Teachers commented that this was a challenging aspect of their course design. In a focused interview, one teacher responded, "Another (challenge) was just thinking of new ways of doing something (online). I've been tied to lecture for so long."

Is the online learning effective? Lorenzo & Moore (2002) pointed to the Sloan Consortium's five-pillar model of quality online instruction, which states that interaction is the key to quality online learning experiences. Their study further emphasized that to accomplish this, educators must "understand how to build online learning environments that generate meaningful discourse and encourage deep reflection, with significant opportunities for collaboration between student and teacher and student and student" (p. 4). Lorenzo and Moore's study affirmed that 73% of students agreed that it is the teacher who facilitates productive discourse.

The findings from the present study also suggested that the quality and quantity of student interactions are related to student learning. Forty-seven percent of grades students received in the blended courses in this study were a grade of A or A-. Therefore, teachers must also consider the type of online interaction created in the blended course, teacher to student and student-to-student.

This study conducted in the 2009-2010 school year had over 90,000 online interactions. Ninety-eight percent of the interactions that were characterized by students responding to a teacher prompt or a classmate comment showed that students met the criteria for discourse. The comments and interactions were either *strong* or *good* for ideas or content in the responses posted by students.

As other institutions and school districts consider the implementation of blended learning, it will be important that the preparation and training for teachers focus on the vision and design for blended instruction. As Bransford et al. (2000, 2002) indicated in the theoretical model *How People Learn*, good learning environments consider

127

knowledge, assessment, and a learner-centered approach to create a quality experience for the learner.

At the core, it will be the pedagogy that will determine the quality of the learning experience for students. This researcher's theoretical model acknowledged the contribution that the Bransford et al. (2000, 2002) framework provides, but would add that the design and delivery of the course in the online and face-to-face portion of the course is crucial to student learning and engagement. The results from this study supported this position. Student-to-student interaction in this study also supported the finding by the Sloan Consortium, which found that student-to-student interaction contributes and facilitates productive discourse (Lorenzo & Moore, 2002). Shown in Figure 12, a revised theoretical model is proposed by this researcher for a blended learning setting.
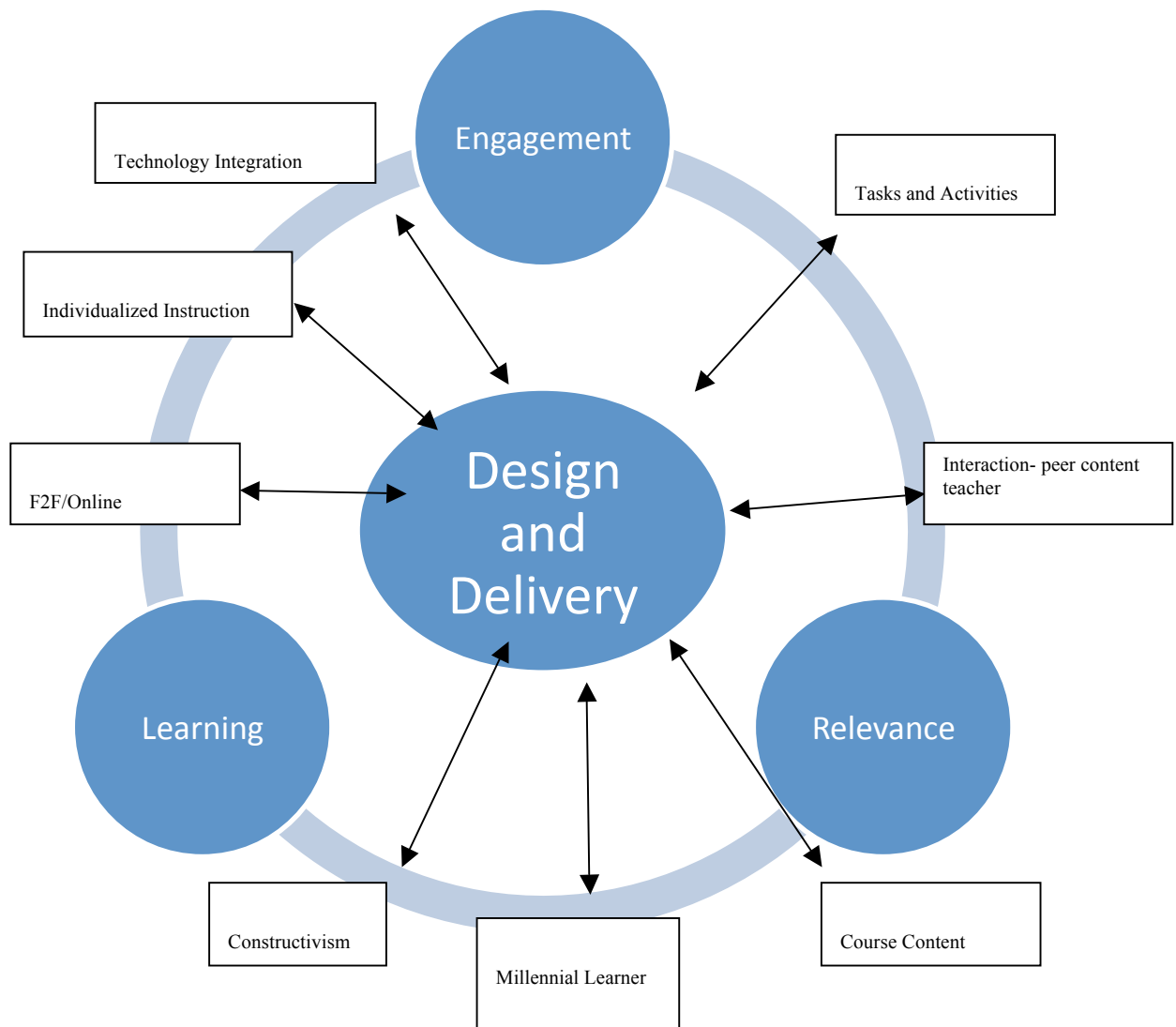
Figure 12 .High school blended learning theoretical model.

Components in a Comprehensive Blended Program

The data collected from this study raised some compelling and thought-

provoking ideas worth considering for the implementation of blended instruction. This

section attempts to clarify the big ideas that practitioners should critically consider as they design and prepare to implement a blended course.

The teachers participating in this study were characterized as early adopters. This comes from the fact that many of the teachers participating in this study were willing to pilot blended learning instruction in their high school. The teachers in both West Ottawa High School and Traverse City West High School were approached and invited by their principal to teach in a blended setting. Both principals gave indications that the teachers participating in this study had an inclination to integrate technology in their instruction. All of the teachers were considered *tech savvy* by the principals and colleagues in their respective high schools. These significant observations have impacted this researcher's recommendations about the critical components required to create, implement, and sustain a blended program in a high school setting. Teachers who are either innovators or early adopters would be the first to test out a new concept or support, bringing it to the majority of teachers for consideration or adoption into mainstream practice (Dziuban et al., 2004). For this researcher to provide practical suggestions for implementation and practice, there must be some reflection that adoption and implementation may be more difficult with those who Rogers (1995), as cited by Dziuban et al. (2004), labels "early and late majority" (p. 269). Rogers pointed out that those early and late majority adopters may need higher levels of persuasion. The size of the group in the early and late majority is often significantly larger and, therefore, will have a larger variety of needs (Dziuban et al., 2004).

This researcher felt that the teachers participating in this study were motivated to pilot or continue teaching in a blended format because they were inspired by the blended approach. Rogers' (1995) Diffusion of Innovation model is a brilliant reminder and reference for administrators and teachers planning and hoping to implement blended learning instruction building-wide at the high school level. The plan for adoption and implementation cannot be a *one-size-fits-all* approach.

Getting Started

The initial preparation to adopt blended learning instruction in a high school will require some critical thinking about the purpose of blending before instruction ever begins. The literature reflected that there are varying degrees of blending and several purposes for which educational institutions may choose to blend.

The two high schools in this study chose to implement blended instruction because they had a vision that the integration of technology in classroom instruction was vital. To an even greater degree, both high schools decided that being student-centered, project-based, and requiring students to become problem solvers and critical thinkers is characteristic of classrooms in the 21st century. Graham (2006) stated that the primary purposes for blending should be (1) improved pedagogy, (2) improved cost effectiveness, and (3) improved access and convenience for students

In the present study, both high schools elected to implement blended learning for the purpose of improved pedagogy. Schools who decide that their purpose for blending is for a reason different than improved pedagogy should reflect on the nature of blended environments as stated in the research and literature. Transformational blends require

teachers to re-examine the teaching and learning relationship, whereas enhancing and enabling blends focus on improving student-teacher productivity and possibly improvements in the effectiveness within which learning occurs in a traditional classroom setting (Graham & Robinson, 2007). Teachers are the primary designers and deliverers of content, and teachers who choose to use a blended approach must be aware that superficial blended courses that do nothing more than place curriculum online for increased access, efficiency, and productivity will not improve pedagogy.

Because the purpose of the blend should be about active pedagogy for students, it is recommended that high schools and districts considering implementation develop a comprehensive, professional development plan for potential teachers of blended instruction. A comprehensive and supportive plan should consider the outcomes desired for *blended specialists* and their students. This approach is critical so that barriers to implementation may be avoided. The professional development plan should include several key components that support beginning and experienced blended teachers.

With most blended instruction, it is the experience and trial and error that is significant to the participants, as they become blended teachers (Ed Online, 2004). Actual teaching of the blended course allows teachers to begin to understand the change in student and faculty roles and the impact of technology on the teaching and learning process (Graham & Robinson, 2007).

An additional and critical feature of a comprehensive approach to preparing teachers for blended instruction would be the establishment of a regional or local professional learning community of blended teachers.

An additional reason for creating a professional learning community of blended specialists comes from the literature indicating that teachers and students are driving the increased use of *web 2.0* tools such as online generated content, social networking for instructional purposes, virtual learning environments, digital media resources, or online communication tools (Eschoolnews, 2009). Including web 2.0 tools in professional development training programs will provide the exposure and comfort teachers will need to incorporate the tools more effectively in the classroom.

Therefore, this researcher would propose that a comprehensive approach to implement blended instruction at the high school level would require that the school and/or district develop a clear purpose for adoption of blended instruction. Districts and high schools should invite and recruit the innovators and early adopters who may be interested in becoming blended teachers. The selection of teachers to implement is critical to the sustainability of blended instruction. Generate a plan to support cohorts of teachers for initial and ongoing professional training. The initial training may take on more of a whole group approach but then proceed with the ongoing professional learning based on teachers' needs. The outcome a school should desire is a teacher who is capable of creating a blended learning environment that becomes a *transforming* blended approach to instruction. The transforming blend's primary purpose should be to improve design and delivery of instruction. *Superficial blends* add nothing significant to instruction. More research is needed to determine whether superficial or enhancing blends are stepping-stones to transforming blends (Graham & Robinson, 2007).

The plan should also recognize that adult learning happens at different rates and stages and, therefore, a blended instruction progression chart should be created. Expertise as a blended teacher will take time, and administrators should not only recognize but support teachers who continue to evolve in their understanding and practice of blended instruction in the classroom.

These suggestions to be incorporated into a comprehensive approach for professional development of blended teachers will help to reduce barriers towards implementation of blended instruction at the high school level. They also establish an atmosphere where administration and teachers may work collaboratively and collectively to ensure blended instructional delivery makes progress toward the *ideal* in each blended classroom at the high school level. All teachers in this study agreed in some way that either the initial or ongoing support they were receiving to teach in a blended course setting was a vital factor for their success as a blended teacher in their high school.

One barrier to successful implementation that should be avoided is the additional time a teacher would need to develop and maintain their course site. Five of the eight teachers in this study indicated that the initial time commitment to develop their course site was substantial. One teacher stated, "Don't think it is going to be easier. It takes more time, especially in the beginning." Both schools in this study expected that their blended teachers would use their non-meeting/online days as time they could maintain and develop their course websites. Teachers were also expected to meet with students who requested additional support or students who were identified by their teacher as needing academic support.

Redefined Relationships

As this researcher observed teachers and students during this study, a key finding that grew and evolved was the importance of relationships and interaction in blended courses. Teachers described many instances wherein students who did not participate in traditional face-to-face courses were more apt to participate in the online portion of the blended course. In fact, one teacher noted the greatest benefit to her was that she could know every student better because the online discourse and discussion required all students to respond. She went on to explain that this was different from the traditional course because often it is only students who are comfortable speaking in class who respond and participate in discussion and discourse. The study's results also indicated that both students and teachers supported the view that teachers and students got to know each other in a different way. One teacher further explained that the technology allowed her students to contact her more often via email or instant messenger. She also specified that this communication created a greater level of trust between the student and teacher. Given these findings, this researcher proposes that the blended classroom redefines the relationship between teachers and their students.

The use of technology moves teachers more toward technology with which students are already comfortable. In a survey administered by Project Tomorrow, the results produced several indicators of what students want from their schools. One recommendation stated that "schools should find ways to create instruction that runs parallel to how students are using collaborative tools and web 2.0 technologies outside the classroom" (Pierce, 2009, p. 1) The observations and conclusions in the present study

do not indicate that either of the participating schools was considering the use of mobile technology in blended courses. Yet their use of technology and web 2.0 tools for interaction, accessing content, and participating in activities that require collaboration and networking is clearly moving closer to supporting students with the use of technological tools that the students use outside of school. Web-based instruction promotes connections and relationships for millennial learners. It is that sense of connection through web-based instruction that millennial learners may see that they enjoy instruction. Enjoyment in a course is one of the critical experiences leading to engagement and learning.

Woods, Badzinski, and Baker (2007) found that student grades were strongly linked to the number of *posts* a student made, so staff should be mindful of the conclusion that students want more use of technology. The design of the interaction in the course has connection to the engagement and the grade a student may receive.

Individualized Instruction

Information about the transformation of relationships between teachers and their students and relationships between students in blended courses has other implications for instruction. The structure of the blended courses in this study supported the possibility that teachers had more flexibility to provide supplementary academic support in a one-to-one or small group setting. The structure of attendance at both high schools required students to attend their blended course two or three days per week. It was on the alternate days when students were not required to attend their class in person that many teachers responded to individual students who requested instructional support. This flexibility

136

gave students and teachers further opportunities to enhance their relationship in face-to-face meetings or by virtual communication.

The structure of the blended course also provided students access to their teachers' expertise and knowledge of the content, giving students additional opportunities for instructional support during the school day. The implications for practice dictate that teachers begin to know their students more closely and, therefore, provide instruction that meets more individual student needs within the blended classroom.

Post-Secondary Preparation

All of the recommendations and discussion thus far in Chapter 5 relate to the improvement of instruction and the learning experience for students through the implementation of blended learning instruction. Yet another reason for changing the paradigm for instructional delivery in the 21st century classroom is that the information age has sped up the pace and type of information we process (Marx, 2006). It has been said that the majority of any technical information a student has learned in college in their freshman year will be obsolete before they graduate (Tapscott, 2009). Blended instruction begins to shift the emphasis toward student-centered instruction. Students assume greater responsibility for their learning, and teachers design and create experiences for students that require students to generate meaning and understanding around big ideas and generative topics. This is critical because it instigates a shift from a focus on teacher-centered instruction to our customer, the student. Tapscott referred to this as interactive learning, where students are at the center of learning, as discovery and inquiry learning is emphasized. These are important features for students when one considers what will be

137

expected of them in the post-secondary setting. For those students who will experience a college or university after high school, Conley (2007) indicated that schools should implement several key components: a challenging, intellectual development – curriculum is developed and assessed around big ideas of each subject; cultivation of *key cognitive strategies* – intellectual openness, inquisitiveness, analysis, reasoning, argumentation, and interpretation; an academic program where students assume more control and responsibility for their learning, including independent learning that may occur outside of class; and professional development for teachers that educates and helps them promote an intellectually challenging classroom that works towards deepening student engagement (Conley, 2007).

Blended instruction begins to prepare students to be college-ready versus college-eligible. It does so if schools aspire to implement blended instruction where the transforming blend is the goal. A pedagogical shift by teachers in the design and delivery of instruction will emphasize greater student ownership of learning, and teachers will become facilitators of learning rather than transmitters of knowledge.

In addition, the current format and structure of blended courses at both high schools in this study required students to manage their time more effectively to learn content and to complete course requirements. Students were able to demonstrate understanding of key concepts and big ideas in their courses. Blended instruction may also expose high school students to key technologies and applications that they would be expected to know and use effectively in a college or university setting. Requiring students to use *web2.0* technologies is less about the technology and more about using the

technology to radically change the relationship between the teacher and the learning process.

Altered School Day

The existing and new technologies used by students and their teachers in this study also illustrated the beginning of a shift to redefine and transform academic credit and seat-time requirements. Students could choose to come to the physical school building and classroom space on the non-meeting days. This is a departure from past practice for school districts in Michigan. School has widely accepted that learning occurs within the *teacher-mediated* classroom. Welch (2007) pointed out that blended instruction is a shift from the Carnegie unit as a way to measure time in the classroom to a measurement that focuses on learning and achievement. Blended teachers should focus their design and delivery of experiences for students on relevance to learners. This is important considering that students' learning environment is mediated by both online and the face-to-face environments.

Blended teachers in this study commented frequently during focused interviews that their school day was really redefined because of the technology used by students and teachers to communicate and demonstrate learning. A teacher's work day was often extended because course work and information about a blended course was available to students twenty-four hours a day, seven days a week. In this instant access environment from anywhere that has Internet access, a teacher's work day is redrawn to include interaction with students well beyond the traditional high school day from eight to three. As blended learning potentially becomes more prevalent and desired by more frequently

by students, schools will need to address how to support teachers whose school day is different due to their role as a blended learning teacher. Teachers must define boundaries and time that is reserved for spouses and family. Teachers should also balance that with the knowledge that some of the most meaningful communication and learning with their students may occur online via email, instant messenger, or instructional chat rooms. Teachers and students in a blended classroom should be able to initiate communication in spontaneous and asynchronous time frames.

Concerns with Blended Learning

The results of this study indicated that blended learning may hold many promises for the future of high school learning environments, yet many concerns shared by students and teachers participating in this study also became apparent. As with most change, there is benefit and consequences for innovation (Rogers, 1995). Rogers stated that those initiating change often assume that the adoption of innovation only produces beneficial results and fail to consider some of the consequences associated with the adoption of the innovation. While this researcher is intrigued with the promise that blended learning and instruction may hold for high school settings, it is important to avoid the *pro-innovation bias* and recognize some of the concerns and consequences of adopting the blended learning model in the high school setting.

Student Profile

One of the biggest concerns expressed by four of the seven teachers in the study was about students. Many concerns related to the type of student who should be enrolled

in a blended course. One teacher expressed, "The student and their support network's ability to assist by choosing the right environment (traditional or blended) for the student's best learning setting will be crucial, as this (blended) isn't for everyone." Teachers also stated that more student ownership of their learning is important in this environment due to the independent nature of the blended courses. One teacher remarked:

> Blended courses are not for everyone. Some students need a structured learning environment to stay on track and achieve goals. Students who need structure and lack self-discipline will most likely struggle in a blended course.

A second teacher in the study who had taught a blended course in four different trimesters reflected on his experiences and observations while teaching the blended course:

> There may be far too much freedom for certain students who lack motivation to do the extra amount of self-teaching required in the blended format. Academically motivated students tend to do very well in a blended environment. Conversely, the academically unmotivated students have typically floundered in my blended courses.

A question put forth by a teacher in a narrative response asked, "How does a high school predict who will do well in a blended format?" The teacher suggested that schools would be more likely to offer more blended courses if they could better match the course to kids who are capable of thriving in it, and avoid putting kids who cannot learn well in that environment. Three of the teachers in the study reported that counselors should have some sort of screening criteria so that students who are not ready for this method of

instruction are not admitted. Overall, six of the seven teachers expressed concern that the blended format required certain qualities and characteristics in students for likely success and achievement in a blended course.

The results from this study signified that for students to be successful in blended courses, a student profile for blended courses should be developed. Teachers stated that this would help eliminate students who may not be successful in this instructional setting. This should be a concern for high schools considering the implementation of blended learning. It is a concern because, although student success is critical for learning and preparation for a post-secondary setting, eliminating students from the opportunity to participate in a blended course suggests blended learning is not for all students. This researcher suggests a different question that high schools staff should consider: "What must students experience in their course of study to have the skill necessary to be successful in a blended setting?" If blended learning is only available for the academically motivated and those who have the skills to succeed, then blended learning is just another program for the elite student. All students should have the opportunity to experience a blended approach to gain from the experience, if for no other reason than to potentially motivate or build the skills needed to be prepared for their post-secondary experience.

Interaction

Teachers in this study routinely compared their experience in the traditional face-to-face setting to their blended course(s). Although teachers acknowledged the benefits of the blended course, an area of conflict with teachers concerned interaction and

communication with students. A teacher stated that she felt more accessible and available in a face-to-face class because,

> There was a lack of spontaneous feedback (in blended courses) and some students need the relationship that is developed in the daily face-to-face time. Yes, it (blended) offers opportunities to interact online, but there is still something to be said about that smile, pat on the back, positive verbal interaction. Some things just do not translate well over technology.

Teachers also commented that the blended format lacked spontaneity and the online portion of the class did not reveal body language and tone you see in face-to-face setting.

> I think the communication for me was so much more instantaneous when we were doing a class discussion (in face-to-face). When we are having a discussion, I can jump in and play devil's advocate or direct the conversation one way, and I can do that in a forum, but the kids don't pay attention. They put their post on and then they're good. On a forum, you lose the tone, and you don't know how somebody sounds.

Students also had some concerns about the interaction and communication in the blended courses. Nearly half of the students (48%) responded in the survey that the amount of interaction with their teacher was less than compared to the traditional face-to-face courses. However, only 14% stated that the quality of the interactions was low or very low quality. Students stated in twenty-nine open-ended responses that communication and interaction should be improved. Students said that improvement

could come from more face-to-face sessions (i.e., 3 days per week versus two), or more interaction with the teacher. Several students stated, "I would increase communication between the teacher and the students. I felt it was hard to understand what the teacher wanted by the online postings." Other students also shared their concern about learning concepts online instead of having them explained face-to-face.

Course interaction between students and teachers provided some insight about the importance of course organization and time management for the teacher. Organizing and designing a course where students will learn online may appear straightforward, but communication is unmistakably critical to the success of the course (Vignare, 2007). This requires staying up on forum posts and journal entries made by students, keeping websites and grades up to date, and knowing when the online portions of the blended course should be part of the face-to-face meeting times.

Course communication also requires that the professional development and training prior to implementation of a blended course should focus on developing respectful and meaningful online discussions. The research of Kaleta et al. (2007) revealed that faculty developers should offer guidance on how to use the blended format to extend personal relationships from both environments to create an integrated and positive community of learners (p. 130).

Faculty Preparation

Faculty professional development and learning opportunities to prepare teachers for the implementation of blended instruction was also a concern for teachers in this study.

It would be difficult for a teacher to be an effective blended facilitator if they did not participate in some sort of blended instruction training. Teaching in a blended environment is very different from teaching in a traditional classroom environment. Teachers must re-think the learning activities and adapt them to the online environment.

Six of the eight teachers were satisfied with the training they received but indicated that if they had not received the training prior to implementing a blended course, they would not have been successful teaching in the blended format. One teacher in the study had taught in a blended instructional setting at the college level and attributed his success to his previous experience. Another teacher in the study did not receive any formal training except for peer mentoring from a colleague who had previously taught a blended course.

Results from this study suggest that professional development and faculty development prior to the implementation of blended learning should help alleviate concern about how teaching style would translate to the blended format. It should also prepare teachers to adopt the teacher role(s) necessary for a successful blended setting. In addition, faculty preparation should not just consist of an initial training but ongoing professional learning, because it is not just about preparation to teach a blended course but also about the evolution of the teacher as a blended educator. Although the findings of this study cannot be used to make generalizations, failure to consider these ideas for faculty preparation may be a huge barrier to the success of a blended program in any high school.

Teacher Workload

Another important concern expressed by teachers in this study was the change in the boundaries around work. Six of the eight teachers stated that time to complete activities associated with teaching a blended course changed the traditional boundaries of work. Three teachers shared that the online work of preparing the course site, communicating with students, updating the course site, and grading assignments submitted by students required significantly more time than teaching a traditional face-to-face course.

The blended course was more time-consuming for several reasons. One reason that was stated by four teachers was the change in the communication between students and teachers. The online environment allows students to work on course assignments and requirements at any time of the day and, therefore, required teachers to check the course site many times throughout the day to keep abreast of the work submitted by students. One teacher commented, "Managing the Moodle site became very challenging toward the end, because as the trimester changed, I had to rework the days and weeks on the Moodle. If we had a snow day or other interruptions that I could not plan for, that threw off my entire Moodle site." A second teacher expressed a concern about time saying:

> Definitely set boundaries. Make sure you let students know you will be available
> at certain times. I was on Moodle all the time. We would be sitting at home
> watching the game, and I would be on Moodle and the kids would be on it. So we
> were contacting each other back and forth, and it was good because that is what
> they needed, but it was bad because it was taking away from my family time. That

146

is so hard for me because they need that, but at the same time, there has to be a line somewhere where it gets cut off. So I really did draw the line this trimester, but I feel that by doing so the kids get cheated. I struggle with that, I don't know where you draw the line.

Related to additional time for teachers was the worry about how much work was appropriate in a blended course. This study and other cases in the literature referred to the *course and a half syndrome* as a significant issue for blended teachers. One teacher commented that the student feedback she received was that she gave far too much to do on the online days. After some reflection, the teacher agreed with her students and adjusted the workload. Even so, teachers struggled to determine what assignments to give up from the face-to-face classroom. Two teachers felt that because they were meeting less often than in the traditional face-to-face course, more work should be assigned to the online days. This is an issue Kaleta et al. (2007) also found in the research conducted at the college level. While the dangers of this syndrome were stated to teachers, Kaleta found that many teachers still got carried away with activities and work assigned to student and, consequently, themselves. Blended teachers must avoid the temptation to do too much too soon or the result may significantly compound the time management challenges faced by a blended teacher (Kaleta et al., 2007). The effects could be harmful to the teacher and students who are participants in the course. School administrators and faculty preparation plans must be prepared to provide teachers with significant time for preparation of the course. Teachers must be prepared to spend a significant amount of time in the *front end* of a blended course and consider the amount of time they need to

read online comments and assignments. Teacher preparation for blended instruction should provide teachers with assistance about how to manage the face-to-face and online work assigned to students.

Connectivity and Compatibility

Blended courses in this study demonstrated that an area of apprehension is associated with connectivity and compatibility. Students and teachers reported that access was a concern to both groups. Although most students had access to computers in their home, some students and teachers reported that access to high-speed internet was a concern. Some students also said that the computer they had at home was too old or had software incompatible with the class Moodle site. One teacher stated, "I have had students each term who struggle because they don't have a computer, or, if they had one, did not have enough access to it at home." All students in the study had access to computers and the internet at their respective high schools, but students who do not have access outside of school or at the local library may be very limited to successfully complete a blended course. A blended course is 100% tied to technology. Therefore, schools considering this approach must make plans to overcome this significant drawback to the blended course setting.

The blended course is not a panacea for the problems facing the high school educational setting. One important comment made by a teacher was, "As a traditionalist, I still prefer face-to-face time but recognize that this is not necessarily what works best for students." The significant concerns and drawbacks about the blended learning setting may be largely about the level of experience the teacher has teaching a blended course.

Teachers with online teaching experience have significantly different needs for training sessions than their inexperienced counterparts.

Despite the stated drawbacks of the blended setting, seven of the eight teachers in this study intended to continue teaching in the blended setting. All of the teachers agreed that incorporating technology into the instruction is important for the future of their teaching practice. Teachers stated it was important that they "remain flexible and accommodating for the classroom of the future." The discussion about concerns and apprehension about blended instruction should be heeded by those designing the faculty development plan for the implementation of blended courses in a high school. Although some of the concerns cannot be avoided, it is important to be cognizant of the drawbacks to anticipate and prepare for the experience teachers and students will have. As one teacher stated, "They should still do it, but just go into it with open eyes!"

Further Research

The research and results from this study suggest several areas for further research. The areas for further study may illuminate more information and details for school leaders about the implementation and sustainability of blended learning instruction in the high school setting.

Further research should examine the learning styles and interests of millennial learners. In this study, the data collection from students and teachers did not consider the characteristics of the millennial learner as a variable to be considered. Blended learning specialists could use this information to inform their design and delivery of instruction.

During this study, teachers used technology provided by the school to implement blended instruction as currently defined. It would be important to understand what role and potential mobile and hand-held devices may have to improve instructional practices in the blended learning environment.

Closer examination of the theories and current research on adolescent development should be conducted. This information may better inform teachers of blended and traditional classrooms about how to design and deliver instruction that is closer to meeting the adolescent learner's needs. This study did research the pedagogical role teachers assume in a blended classroom, but closer examination of the adolescent learner may allow teachers and principals to become more cognizant of the critical nature of interaction between teacher, student, and content in the instructional core.

Further blended learning research should examine whether teachers who begin by implementing a superficial blend advance their instructional practices toward transforming blends. During the time this study was conducted, teachers who taught the blended courses were not analyzed about their skill and/or nature of blend they taught. Some measure of evaluation to assess the nature of the blend (enhancing, enabling, or transforming) would give teachers and principals definitive steps and actions to be taken to move instruction toward a transforming blend.

The purpose of this study was not to conduct an evaluation of individual blended courses, but interviews were conducted and data were collected to determine how the activities in blended classrooms were different from traditional face-to-face classrooms. Further research could help to establish a set of standards and criteria that blended teachers could use as guiding principles or standards for practice in blended classrooms.

School districts interested in implementing blended learning instruction might be able to create and sustain an ongoing professional learning community that would work to advance and support blended teachers' instruction. Planning and designing are critical features for success of blended instruction in a school, but the implementation and sustainability of the program are equally important. Research to determine appropriate measures and practices to sustain blended programs in a high school setting would be valuable. A longitudinal study would provide a comprehensive review of the needs and requirements for implementation and sustainability of successful blended instruction in a high school setting.

Summary

This chapter included a discussion of the findings that emerged from examination of the implementation of blended learning instruction in two comprehensive high schools in western Michigan. The findings demonstrate that despite the rapidity of technological innovation in our culture and educational institutions, it remains the teacher who has the task of designing and delivering instruction. This is still is the most fundamental aspect of whether students will be engaged in the learning and construct meaning from the experiences to which they are exposed. Additional ideas emerged that indicated that learning is institutional and that all members of the institution must continue to grow and learn.

Predominant theories and implications of the blended model about learning were reviewed, and the researcher suggested a theoretical framework that integrated aspects of several theoretical models. Advice and direction was provided to those considering

development of a comprehensive blended program. The components included

suggestions of how districts might get started with blended instruction, changing the

teacher-student relationship, professional development, individualized instruction, post-

secondary preparation, and an altered school day schedule. The final discussion in this

chapter concerned some of the concerns about blended learning and the implementation

of blended instruction in the high school setting and concluded with recommendations for

future research.

REFERENCES

Achieve. (2005). *An action agenda for improving America's high schools* (Achieve Inc. & National Governors Association). Washington, DC: National Governors Association. Retrieved May 1, 2009, from National Governors Association Web site: http//:www.nga.org

Admin of eSchoolNews.com. (March 25, 2009). *What do students want from their schools?* (Top News, pp. 1-2). Retrieved July 7, 2010, from www.eSchoolNews.com

Anderson, L. (2009). Upper elementary grades bear the brunt of accountability. *Phi Delta Kappan, 90*(6), 413-418.

ASCD. (2007, Spring). The building blocks of high school redesign. *Infobrief, 49*, 1-8.

Bass, B. (1994). *Improving organizational effectiveness through transformational leadership*. Thousand Oaks, CA: Sage.

Bogdan, R. C. (1992). Foundations of qualitative research in education: An introduction. In *Qualitative Research for Education. An Introduction to Theory and Methods* (2nd ed., pp. 1-57). Boston: Allyn and Bacon.

Bonk, C. (2006). The future of online teaching and learning in higher education: The survey says. *Educause, 29*(4), 20.

Bonk, C. J., & Graham, C. R. (2006). *The handbook of blended learning*. San Francisco: Pfieffer.

Brandon, A. F., & All, A. C. (2005). Constructivism theory analysis and application to curricula. *Nursing Education Perspectives, 33*(2), 89-92.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (2002). *How people learn* (6th ed.). Washington, D.C: National Academy press. (Original work published 2000)

Brewster, C., & Fager, J. (2000). *Increasing student engagement and motivation: from time on task to homework*. Portland, OR: Northwest Regional Education Laboratory.

Center for Digital Education. (2007, March 20). *Teaching the millennials* (2007). Folsom, California. Retrieved February 21, 2009, from http://www.centerdigitaled.com/story.php?id=104514

Center for Evaluation & Educational Policy. (2007). *Voice of students on engagement: a report on the 2006 high school survey of student engagement* (June 2007). Bloomington, Indiana: Indiana University. Retrieved July 20, 2008, from http://ceep.indiana.edu/hsse

Charles, C. M. (2002). *Introduction to educational research* (4th ed.). Boston: Allyn and Bacon.

City, E., Elmore, R., Fiarman, S., & Teitel, L. (2009). *Instructional rounds in education*. Cambridge, MA: Harvard Education Press.

Clark, T. (2008, May). Online learning: Pure potential. *Educational Leadership, 1*, 4. Retrieved may 27, 2008, from http://www.ascd.org/portal/site/ascd/template

Coates, J. (2007). *Generational learning styles*. River Falls, Wisconsin: LERN Books.

Conley, D. (2007). *Redefining college readiness* (Volume 4, pp. 1-30). Eugene, OR: Bill

    and Melinda Gates Foundation.

Dede, C. (2004). Planning for neomillennial learning styles: implications for investments

    in technology and faculty. *Educause, 10*(3), 1-32.

Devaney, L. (2008, October 29). Report assesses K-12 online learning. *eSchoolNews, 1*,

    1-4. Retrieved February 19, 2009, from http:www.eschoolnews.com/news/top-

    news

Duffy, T., & Cunningham, D. (1996). *Constructivism: implications for the design and*

    delivery of instruction. Retrieved September 26, 2010, from CiteSeer Web site:

    http://citeseerx.isd.psu.edu.viewdoc/summary

Dziuban, C., Hartman, J., & Moskal, P. (2004). Blended learning. *Educause Review,*

    2004(7), 1-7.

Ed Online. (2004). *Constructivism as a paradigm for teaching and learning*

    [Constructivism]. Available from http://www.thirteen.org/edonline/

    concept2classroom/constructivism

Ed Week Staff. (2008, October 28). Online learning evolves. *Education Week, 2008*(10),

    2. Retrieved October 28, 2008, from http:www.edweek.org

Educational Benefits of Social Networking Sites Uncovered. (2009). Retrieved February

    24, 2009, from http://www.sciencedaily.com/releases/2008

Educational Research Service. (2008). *Effective high school reform* (2008). Alexandria,

    Virginia: Educational Research Service.

Elmore, R. F. (2000). *Building a new structure for school leadership*. Washington, D.C:

    Albert Shaker Instituute.

Elmore, R. F. (2007). *School reform from the inside out*. Cambridge, Mass: Havard

    Education Press.

Flanagan, M. (2007, September 07). Online learning options [Letter to the editor].

    Michigan Department of Education, pp. 1-3.

Fowler, F. C. (2004). *Policy studies for educational leaders* (2nd ed.). Upper Saddle

    River, NJ: Pearson Education (Original work published 2000).

Friedman, T. L. (2005). *The world is flat: A brief history of the twenty-first century*. New

    York: Farrar, Straus, and Giroux.

Fritz, R. (1984). *The path of least resistance: Learning to become a creative force in your

    own life.* New York: Fawcett Columbine.

Fullan, M. (2001). *Leading in a culture of change*. San Francisco: Jossey-Bass.

Fullan, M. (2007). *The new meaning of educational change* (4th ed.). Boston: Teachers

    College Presss.

Gardner, H. (2008). *Five minds for the future*. Boston: Harvard Business Press.

Garrison, D. R., & Kanuka, H. (2004). Blended learning: uncovering its transformational

    potential on higher education. *Internet and Higher Education, 7*, 95-105.

Garrison, R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence,

    and computer conferencing in distance education. *American Journal of Distance

    Education, 15*(1), 7-23.

Glatthorn, A. A. (2005). *Writing the winning thesis or dissertation* (2nd ed.). Thousand

    Oaks, California: Corwin.

Graham, C. R. (2006). Blended learning systems. In C. Bonk (Ed.), *The handbook of*

    blended learning. Global perspectives and local designs (pp. 3-21). San

    Francisco: Pfeiffer.

Graham, C. R., & Robinson, R. (2007). Realizing the transformational potential of

    blended learning. In *Blended Learning Research Perspectives* (pp. 83-110).

    Needham, MA: The Sloan Consortium.

Gudzial, M., & Turns, J. (2000). Effective discussion through a computer-mediated

    anchored forum. *Journal of the Learning Sciences, 9*, 437-469.

Jones, R.D. (2008). *Strengthening student engagement*. Rexford, N.Y: International

    Center for Leadership in Education.

Kaleta, R., Skibba, K., & Jootsen, T. (2007). Discovering and designing hybrid courses.

    In A. Picciano & C. Dzuiban (Eds.), *Blended Learning research perspectives* (pp.

    111-143). Needham, MA: Alfred P. Sloan Foundation.

Kearsley, G., & Shneiderman, B. (1998). Engagement theory: A framework for

    technology based teaching and learning. *Educational Technology, 38*(5), 20-23.

Knobel, M. (2009, March). Let's talk 2.0. *Educational Leadership, 66*(6), 20-24.

Kozma, R. (1991). Learning with media. *Review of Educational Research, 61*(2), 179-

    212.

Larson, J. (2009). Transformational leadership: leading schools in a time of global

    cultural shifts. *Independent School, 68*(3), 51-58.

Leese, M. (2009). Out of class - out of mind? The use of virtual learning environments to

encourage student engagement in out of class activities. *The British Journal of

Educational Technology, 40*(1), 70-77.

Lincoln, B., & Stommen, E. (1992). Constructivism, technology and the future of

classroom learning. *Education and Urban Society, 24*(4), 466-476.

Lorenzo, G., & Moore, J. C. (2002). The Sloan consortium report to the nation: Five

pillars of quality online education. In *The Sloan Consortium*. Needham, MA: The

Sloan Consortium.

Marantz-Cohen, R. (2001). Using school reform to teach modern U.S. history. *Teaching

History: a Journal of Methods, 26*(1), 22.

Marks, H. & Printy, S. M. (2003). Principal leadership and school performance: an

integration of transformational and instructional leadership. *Education

Administration Quarterly, 39*, 370.

Marx, G. (2006). *Sixteen trends: Their profound impact on our future*. Alexandria,

Virginia: Educational Research Service.

Marzano, R. (2000). Twentieth century advances in instruction. In *Education in a new

era* (pp. 67-95). Alexandria, VA: Association for Supervision and curriculum

Development.

Marzano, R. (2005). *School leadership that works: From research to results*. Alexandria,

VA: Association for Supervision and Curriculum Development.

MASSP. (2008). *Michigan ranks second in U.S. for online learning*

(Tagged:blast.michigan.online). Lansing, Michigan: Author. Retrieved January

18, 2009, from http://www.mymassp.com/content/

michigan_ranks_second_online_learning

Michigan Department of Education. (2008). *Curriculum and instruction*. Available from

http://www.michigan.gov/mde

Miles, M., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded*

sourcebook (2nd ed.). Thousand Oaks, California: Sage.

Mishra, S. (2002). A design framework for online learning. *British Journal of*

Educational Technology, 33(4), 493-496.

Munro, R., & Rice-Munro, E. (2004). Learning styles, teaching approaches and

technology. *The Journal for Association for Quality and Participation, 27*(1), 26.

NASSP. (2004). *Breaking ranks II* (Issue Report 2). Reston, VA: National Association of

Secondary School Principals.

NASSP. (2007). *Academic engagement of all students* (vol. 2, issue 3, pp. 1-7). Reston,

VA: National Association of Secondary School Principals.

Newmann, F. (Ed.). (1996). *Authentic achievement: Restructuring schools for intellectual*

quality. San Francisco: Jossey-Bass.

NACOL. (2008). *Fast facts about online learning* (Issue report, pp. 1-6). Vienna: North

American Council for Online Learning. Retrieved January 15, 2009, from http://

www.NACOL.org

North American Council for Online learning. (2008) *Blended learning: The convergence of online and face-to-face education* (2008). Vienna: Watson.

Oblinger, D. G. (2003). Boomers, gen-xers, and millenials: Understanding the new students. *Educause, 38*(4), 37-47.

Oblinger, D. G. (2005). *Educating the net generation*. Retrieved December 20, 2008, from www.educause.edu/educatingthenetgen

Owston, R., Garrison, R., & Cook, K. (2006). Blended learning at Canadian universities. In C. Bonk & C. Graham (Eds.), *The handbook of blended learning. Global perspectives, local designs* (1st Ed., pp. 338-350). San Francisco: Pfeiffer.

Palak, D. (2006). Integration of instructional technology: A device to deliver instruction or a tool to foster learning. *International Journal of Instructional Media, 33*(4), 355-365.

Picciano, A. G., & Dziuban, C. D. (Eds.). (2007). *Blended learning research perspectives*. Needham, MA: The Sloan Consortium.

Pierce, D. (2009, February 23). AASA hears what's about to disrupt schools. *Eschoolnews, 2009*, 3. Retrieved March 2, 2009, from http://www.eschoolnews.com/news/top-news

Pierce, K. M. (2005). *Posing, pretending, and waiting for the bell: Life in high school classrooms*. Pittsburg, PA: University of North Carolina Press.

Puranova, R. (2009). Transformational leadership in context: Face to face and virtual teams. *Leadership Quarterly, 20*, 342-357.

Renzulli, J. S. (2008). *Engagement is the answer*. Retrieved July 22, 2008, from http://www.edweek.org/ew/articles

Ritchhart, R. (2010). *The seven r's in a quality curriculum*. Retrieved September 26, 2010, from Project Zero Web site: http://www.pz.harvard.edu

Rogers, E. M. (1995/1962). *Diffusion of innovations* (4th ed.). New York: Free Press.

Rosen, L. (2010). iGeneration requires different approach to instruction. *Eschoolnews.com,* 4, 1-4.

Rovai, A. P., & Jordan, H. M. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *The International Review of Research in Open and Distance Learning, 5*(2), 14.

Senge, P. (1990). *The fifth discipline*. New York: Currency Doubleday.

Senge, P. (2000). *Schools that learn*. New York: Doubleday.

Shea, P. (2007). Towards a conceptual framework for learning in blended environments. In *Blended Learning Research perspectives* (pp. 19-36). Needham, MA: The Sloan Consortium.

Solomon, G. (2002). Technology and pedagogy: Why don't we see the promised revolution? *Educational Technology, 42*(2), 71-75.

Stahl, G. (1999). *Seven issues for the next generation of collaborative knowledge-building environments* (C. Hoadley, Ed.). Mahwah, N.J: Erlbaum.

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, California: Sage.

Stansbury, M. (2008, December 15). Tech trends every leader should know. Message posted to http://www.eschoolnews.com/news/top-news/index.cfm

161

Starenko, M., & Vignare, K. (2007). Enhancing student interaction and sustaining faculty

      instructional innovations through blended learning. In *Blended Learning Research*

      Perspectives (pp. 161-178). Needham, MA: The Sloan Consortium.

Student engagement in the high school as a dropout prevention strategy. (2008).

      Retrieved June 28, 2009, from Alliance for Excellent Education Web site: http://

      www.all4ed.org/events/studentengagement_HSdropoutprevention

Survey shows barriers to web 2.0 in schools. (2009, April 16). *Eschoolnews*. Retrieved

      July 7, 2010, from eSchool News Web site: http://www.eschoolnews.com

Tapscott, D. (2009). *Grown up digital*. New York: McGraw Hill.

Thornburg, D. (2002). *The new basics: Education and the future of work in the telematic*

      age. Alexandria, VA: Association for Supervision and Curriculum Development.

Thornburg, D. D. (1992). *Edutrends 2010: Restructuring, technology and the future of*

      education. United States: Starsong.

Vaughn, N. (2007). Perspectives on blended learning in higher education. *International*

      Journal on E-Learning, 6(1), 81-94.

Vignare, K. (2007). Review of literature on blended learning. In A. G. Picciano & C.

      Dziuban (Eds.), *Blended Learning Research Perspectives* (pp. 37-64). Needham,

      MA: The Sloan Consortium.

Wagner, E. (2006). On designing interaction experiences for blended learning. In C.

      Bonk (Ed.), *The handbook of blended learning. Global perspectives, local designs*

      (1st ed., pp. 41-55). San Francisco: Pfeiffer.

Wagner, T. (2008). *The global achievement gap*. New York: Basic Books.

Welch, R. (2007). Educational equivalency. In A. Picciano & C. Dziuban (Eds.), *Blended learning research perspectives* (pp. 231-245). Needham, MA: The Sloan Consortium.

Wise, B. (2008). High schools at the tipping point. *Educational Leadership, 65*(8), 9-13.

Woods, R., Badzinski, D., & Baker, J. (2007). Student perceptions of blended learning in a traditional undergraduate environment. In A. G. Picciano & C. Dziuban (Eds.), *Blended learning research perspectives* (pp. 203-226). Needham, MA: The Sloan Consortium.

Yin, Robert K. (2009). *Case study research design and methods* (4th ed.). Thousand Oaks, California: Sage.

APPENDICES

Appendix A

Interview Protocol and Student Survey

INTERVIEW GUIDE
Description of the Research Study
Researcher introduces him/herself and explains professional background and interest in hybrid teaching and faculty development.

Script: *Thank you for agreeing to be part of our research study. The purpose of this study is to learn about faculty experiences teaching hybrid courses that combine face-to-face with online instruction. The information will provide guidance for faculty who want to teach using the hybrid method and to faculty developers who need to provide guidance to these instructors. As explained in your e-mail, this interview will take about an hour or an hour and fifteen minutes. If it takes longer, we will be happy to schedule a second interview. We understand your time is very valuable. I also need your verbal permission to tape the interview for transcription purposes. So **may I tape record this interview?** As the consent form explains, we will keep your responses confidential. Do you have any questions before we begin?*

Knowledge Stage (Awareness)
1. How long ago did you become aware of the hybrid course format?
2. How did you become aware of the hybrid format? What did you think about it at first?
3. Did you incorporate online teaching activities into your classes prior to teaching your first hybrid course? If so, what were they?
Persuasion Stage (Interest)
4. What led you to consider the possibility of using the hybrid format for **your own** course?
5. What did you hope you could achieve using the hybrid format?
Decision Stage (Evaluation)
6. What were the reasons that finally persuaded you to use the hybrid format?
7. How do you continue to receive information about using and improving the hybrid format?

Script: *An instructor needs to take on many roles when teaching a hybrid course. So for next set of interview questions I will briefly describe four roles and ask you how you experienced these roles in a hybrid course in comparison to the traditional or online environment. These roles are pedagogical, social, managerial, and technical.*

Pedagogical Role: The design and delivery of a variety of *instructional activities* to facilitate student learning (ie: lecture, discussion, group work, assignments). Basically, this is how you developed the course and how you taught it. First I will ask about the design of your course and then how you taught it.

Instructional Design
Learning Technology Center IRB Proposal

8. Can you describe your experience converting your course to the hybrid format? IF ALSO TAUGHT ONLINE: How did your experience designing a hybrid course compare to designing an online course?
9. How did you decide what course activities should be presented online versus face-to-face? Please explain some of your online and face-to-face activities.
10. What are the challenges? How do you deal with those challenges?
11. What are the benefits of having both online and face-to-face learning activities? (NOTE: BE SURE TO PROBE ABOUT BOTH ENVIRONMENTS SINCE FACULTY TEND TO FOCUS ON THE NEWER ONLINE ACTIVITIES).
12. What advice would you give to faculty who are converting a traditional course to the hybrid environment?
Teaching
13. How does your role as a teacher in the hybrid course compare or differ with your role as a teacher in the face-to-face classroom? IF ALSO TAUGHT ONLINE: The online classroom?
14. What are the challenges of teaching in the hybrid environment? How did you deal with those challenges?
15. What do you think are the benefits to teaching in a hybrid environment?
16. What advice would you give to new faculty to regarding teaching in a hybrid course?

Social Roles: The creation of an *environment* that supports a community of learning. This involves the communication and interaction between you and your students and the students with other members of the course, including group activities.

17. With respect to communication and interaction between you and your students, how does your experience in the hybrid course compare to that in the traditional classroom? IF TAUGHT ONLINE: How does this compare to an online course?
18. What are the challenges? How do you deal with these challenges?
19. With respect to communication and interaction in a hybrid course, what are the benefits of using the hybrid format? PROBE: If you have group activities, how is group communication affected by both online and face-to-face interaction?) IF TAUGHT ONLINE: How does this compare with the communication and interaction in a totally online course?
20. What advice would you give to new faculty regarding creating a learning environment in a hybrid course?

Managerial Role: Managing a hybrid course requires balancing the organization of both the online and face-to-face environments. This includes scheduling class meeting times, reading and responding to student communication and assignments, assessments, deadlines, etc.

21. What was your experience balancing and managing these aspects of instruction in a hybrid course? How did this compare to a traditional course IF TAUGHT ONLINE: An online course?

22. What are the challenges regarding the organization and management of a hybrid course? How did you deal with those challenges

23. Are there some positives about organizing and managing a hybrid course, for example not having all the classes face-to-face and organizing the course content, communication,

2Learning Technology Center IRB Proposal scheduling, etc.)? IF NEED TO PROBE: Ask how the course management system helped to
organize their hybrid course.

24. What advice would you give to faculty regarding organizing and managing a hybrid course?

Technological Role: Using the technology in your class or assisting participants with the technology (such as the computer, course management system, or other technology used in your hybrid course).

25. What did you experience with technology issues with your hybrid course?

26. What are the challenges? How did you deal with those challenges?

27. What advice would you give faculty regarding using the technology in their hybrid course? IF NEED TO PROBE: What advice would you give to those who are apprehensive about using technology or those who are very experienced/or like to use technology?

Implementation Stage (Trial)

28. After teaching hybrid course(s), what would you do differently the next time you teach such a course? Please explain why.

Confirmation Stage (Adoption)

29. NEW FACULTY: Do you plan to teach using the hybrid format again? Why or why not? OR EXPERIENCED FACULTY: Why do you continue to teach using the hybrid format?

30. You gave advice for each of the roles to new faculty. But what is the most important advice you would give colleagues preparing to teach their first hybrid course?

Debriefing (advice for faculty and faculty developers)

31. What could have been provided to you during your faculty development training that would have made the implementation of your hybrid course more efficient and effective?

32. EXPERIENCED FACULTY: Now that you are an experienced hybrid instructor, do you have any additional needs regarding hybrid course design or teaching?

33. Anything else you would like to share that we haven't discussed?

Faculty Development Clarification (if needed)
Can you clarify and explain in more detail what you wrote in the electronic survey you filled out regarding:
a. What you wish you would have known before teaching a hybrid course.
b. ANY THING ELSE WOULD LIKE CLARIFIED FROM THE SURVEY
Would you mind sharing your syllabus?
Script: Thank you very much for your time. You shared valuable information that will help both faculty and faculty developers.

Learning Technology Center IRB Proposal
Probing Questions
(Based on Kvale, 1996)
What happened and how did it happen?
How did you feel then?
What did you experience?
What happened in the episode you mentioned?
Could you say something more about that?
Can you give me a more detailed description of what happened?
Do you have any further examples of this?
You mentioned previously something about _____, would you please try and say more about that?

Specific Questions
What did you think then?
How did you react?

Interpreting Questions
You then mean that…
Is it correct that you ___ that…
Does the expression_____ cover what you have just expressed?

SECOND CONTACT WITH PARTICIPANTS: ONCE ANALYSIS IS DONE
Show participants the synthesis of what they said.
Script: Please review. Does this summary and descriptions accurately reflect your experience?
Feel free to make any changes or additions.
1. After reviewing this information, do you have additional advice for other faculty considering the hybrid method?
2. Do you have more advice for faculty developers when training instructors on how to use the hybrid method?
Any other comments you want to make?

Online Survey administered to students participating in the study:

Questions for Blended Students:	Answer
1. I liked having part of the course online and part of it in a classroom.	Agree-Disagree
2. I had to work harder in this course than I would have if the course had been held only in the classroom.	Agree-Disagree
3. The teacher used a greater variety of teaching resources (e.g. web, print, video, audio) because part of this course was online.	Agree-Disagree
4. The teacher used a greater variety of teacher strategies (e.g. group work, discussion, projects and testing) because part of this course was online.	Agree-Disagree
5. The online activities gave me the opportunity to learn in different ways than I do in the classroom.	Agree-Disagree
6. The time I spent online would have been better spent in the classroom.	Agree-Disagree
7. The time I spent in the classroom would have been better spent online.	Agree-Disagree
8. Other students should have the opportunity to take a class like this in the future.	Agree-Disagree
9. How was the quality of interaction with the teacher?	much/little
10. What amount of interaction did you have with other students in this class.	much/little
11. What did you like most about participating in a blended course (part online and part in the classroom)?	Open ended
12. What did you find most difficult or challenging about a blended course (part online and part in the classroom)?	Open ended
13. How would you improve this class?	Open ended

Appendix B

Eastern Michigan University Human Subjects Researcher Approval

EASTERN MICHIGAN UNIVERSITY

Education First

October 26, 2009
Rick Vandermolen
Dear Rick Vandermolen:
The Human Subjects Institutional Review Board (IRB) of Eastern Michigan University
has reviewed and approved as exempt research your proposal titled, "The Examination of
the Implementation of Blended Learning Instruction on the Teaching and Learning
Environment in Two West Michigan School Districts." The IRB determined that the
rights and welfare of the individual subjects involved in this research are carefully
guarded. Additionally, the methods used to obtain informed consent are appropriate, and
the individuals participating in your study are not at risk.
Exempt research does not require reporting of continuation one year after approval if the
project continues. However, should the sample or procedures change as to have an impact
on human subjects, then UHSRC should be notified by using the *Minor Modification to
Research Protocol* or the *Request for Human Subjects Approval* form depending upon the
scope of the changes (see the forms online).
On behalf of the Human Subjects Committee, I wish you success in conducting your
research.
Sincerely,

Deb de Laski-Smith, Ph.D.
Interim Dean
Graduate School
Administrative Co-Chair
University Human Subjects Review Committee

Reference # 090924

Appendix C

Traverse City Area Public Schools Human Subjects Researcher Approval

TRAVERSE CITY AREA PUBLIC SCHOOLS

HUMAN SUBJECTS RESEARCH REVIEW COMMITTEE (HSRRC)
HUMAN SUBJECTS RESEARCHER APPROVAL FORM

RESEARCH MAY·NOT BEGIN UNTIL THE PROTOCOL
HAS BEEN REVIEWED AND APPROVED BY THE
HUMAN SUBJECTS RESEARCH REVIEW COMMITTEE (HSRRC)

PRINCIPAL INVESTIGATOR* _Rick Vandermolen_
Office Address: _1150 Milliken Drive_
City, State, ZIP: _Traverse City, Mi 49686_
Home Address: _2668 Shenandoah Drive, Traverse City 49684_
Home Phone: _231-642-1507_

PROJECT TITLE: _The examination of the implementation of blended learning instruction on the teaching and learning environment in two West Michigan school districts_

PROPOSED PROJECT DATES: From _Sept '09_ To _December '09_
APPLICATION: New _✓_ Renewal _____

Protocols for projects extending beyond one (1) year from date of HSRRC approval must be submitted annually for renewal.

In making this application, I certify that I have read and understand the TCAPS Guidelines for research and that I intend to comply with the policy. Significant changes in the protocol will be submitted to the TCAPS Superintendent or designee for written approval prior to those changes being put into practice.

If this proposal is approved by the HSRRC, the Principal Investigator agrees to notify the HSRRC in advance of any changes in procedures, which might be necessitated. If, during the course of the research, unanticipated subject risks are discovered, this will be reported to the HSRRC immediately.

_____   _8/17/2009_   10/21/09
Signature of Principal Investigator   Date   resubmitt
                                                  R. Vandermolen

*If the Principal Investigator is a student, complete the following:

High School _____   Junior High School _____
Undergraduate Level Research _____   Graduate Level Research _✓_
Faculty Advisor _____   Telephone _231-642-1567_
Department _____   School/College/University _EMU_

_____   _9/21/09_
Advisor Signature   Date

This application has been reviewed and (✓) approved; ( ) disapproved by the Traverse City Area Public Schools Human Subjects Research Review Committee, or deferred until adequate application has been made ( ).

_____   _____
Assistant Superintendent   Date

Appendix D

Informed Consent Letter - Teacher

Dear Potential Participant,

172

My name is Rick Vandermolen. I am a doctoral student at Eastern Michigan University in the educational leadership department. I am undertaking a research project during the first and second trimester of the 2009-2010 school year. The study will examine the implementation of blended learning instruction in a high school. I will be the primary researcher in this research project and Dr. Ronald Williamson will be my co-investigator. This letter is an invitation to participate in the research project. The purpose of this research project is to gain an understanding of the impact of blended learning on teacher instruction.

If you agree to participate, I will ask you to participate in two interviews, write one narrative of your experience teaching a blended learning class, and allow me to do two direct observations of your classroom.

You will be asked to partake in an initial and follow up interview with the researcher. The initial interview will take approximately one hour. Any follow up interview would take less than a half an hour. All interviews will be recorded and transcribed by a third party researcher for improved accuracy. Once the interview is transcribed the recording will be destroyed. The transcribed interview will be forwarded to me without identification.

In addition, the narrative response will be forwarded to me by the building principal anonymously. The narrative response will be a loosely structured response that will simply ask the teacher to reflect on the blended teaching experience in approximately 500 words.

The direct observation will provide the opportunity for the researcher to observe and note any keen insights about blended learning instruction in the classroom setting. This informed consent form, with your real name, will not be matched with any data, and your participation will be kept confidential.

All results will be kept confidential and each piece of data collected will be kept anonymous. At no time will this information be made available to people outside of this study. The confidential data will be kept in a locked filing cabinet at Traverse City Central High School in the Traverse City Area Public School District. I am not aware of any foreseeable risks to you for participating in this research project, nor is the any direct benefit to your participation. However your participation will help this study to examine whether blended learning instruction supports the needs of students to provide a different approach to teacher instruction. The data from this study may also provide insight about course design and best instructional practice when considering the implementation of a blended learning class in the high school setting.

Your participation in this study is voluntary, and there is no penalty if you choose not to participate. Whether you choose to participate or not, a summary of my findings can be made available to you upon request. You can contact me at vandermori@tcaps.net or 231-933-3521. I hope to have the study completed by the spring of 2010. If you choose to participate, you can change your mind and withdraw from the study without negative consequences.

The results of this research will be presented in aggregate form only. There will be no names or individually identifying information revealed. The results will be used to complete this doctoral dissertation on the implementation of blended learning instruction. Your participation may help reveal some of the benefits and concerns about blended learning instruction in your school. It may also help expose some of the implementation concerns you may have. In addition, the results may be used to present in meetings, conferences and educational research publications.

If you have any concerns about this study you can contact me by phone 231-933-3521 or by email vandermori@tcaps.net . You may also contact my dissertation advisor, Dr. Ronald Williamson, at rwilliams1@emich.edu .
This research protocol and informed consent document has been reviewed and approved by the Eastern Michigan University Human Subjects Review Committee for use October 26, 2009 to October 25, 2010. If you have any questions about the approval process, please contact Dr. Deb de Laski-Smith (734.487.002, Interim Dean of the Graduate School and Administrative Co-chair of UHSRC, human.subjects@emich.edu).

Appendix E

Informed Consent Letter – Student/Parent

Dear Potential Participant,

My name is Rick Vandermolen. I am a doctoral student at Eastern Michigan University in the educational leadership department. I am undertaking a research project during the first two trimesters of the 2009-2010 school year. The study will examine the implementation of blended learning instruction in a high school. I will be the primary researcher in this research project and Dr. Ronald Williamson will be my co-investigator. This letter is an invitation to participate in the research project. The purpose of this research project is to gain an understanding of the impact of blended learning on teacher instruction.

If you agree to participate, I will ask you to complete a survey at the end of the trimester. I will review your class's course grade distribution. I will also be allowed to read and review all student entries, responses and comments made in threaded discussions on the course management shell (Moodle).

You will be asked to partake in an online survey. The survey questions will pertain to your participation and learning experience in the blended learning course. The survey will be administered at the completion of the course. Your survey responses will be anonymous and all responses will be confidential. The survey will take approximately 15 minutes to complete.

Throughout the trimester, your teacher may require you to log into the course shell (Moodle class site) and complete various assignments. You may also be required to participate in threaded discussions posted on the class Moodle site. Your comments and responses in will be read and reviewed by the primary researcher. All responses will be confidential and used as aggregate data only. All comments and responses will be retrieved by a third party researcher from the Moodle site, and all names and identification of each student removed before comments and responses will be reviewed by the primary investigator.

Course grade distribution will also be collected by a 3rd party researcher and forwarded to the primary investigator. All identification and names will be removed from the data. All data will be kept confidential. This informed consent form, with your real name, will not be matched with any data, and your participation will be kept confidential.

All results will be kept confidential and each piece of data collected will be kept anonymous. At no time will this information be made available to people outside of this study. The confidential data will be kept in a locked filing cabinet at Traverse City Central High School in the Traverse City Area Public School District. I am not aware of

any foreseeable risks to you for participating in this research project, nor is the any direct benefit to your participation. However, your participation will help this study to examine whether blended learning instruction supports the needs of students to provide a different approach to teacher instruction. The data may also provide insight about course design and best instructional practice when considering the implementation of a blended learning class in the high school setting.

Your participation in this study is voluntary, and there is no penalty if you choose not to participate. Whether you choose to participate or not, a summary of my findings can be made available to you upon request. You can contact me at vandermori@tcaps.net or 231-933-3521. I hope to have the study completed by the spring of 2010. If you choose to participate, you can change your mind and withdraw from the study without negative consequences.

The results of this research will be presented in aggregate form only. There will be no names or individually identifying information revealed. The results will be used to complete this doctoral dissertation on the implementation of blended learning instruction. Your participation may help reveal some of the benefits and concerns about blended learning instruction in your school. It may also help expose some of the implementation concerns you may have. In addition, the results may be used to present in meetings, conferences and educational research publications.

If you have any concerns about this study you can contact me by phone 231-933-3521 or by email vandermori@tcaps.net . You may also contact my dissertation advisor, Dr. Ronald Williamson, at rwilliams1@emich.edu .

This research protocol and informed consent document has been reviewed and approved by the Eastern Michigan University Human Subjects Review Committee for use from October 26, 2009 to October 25, 2010. If you have any questions about the approval process, please contact Dr. Deb de Laski-Smith (734.487.002, Interim Dean of the Graduate School and Administrative Co-chair of UHSRC, human.subjects@emich.edu).

Appendix F

View and Post Activity by Students and Teachers

View Activity

1. Course view - this is any course view whether login is required or not (guest

access).

2. Assignment view- looking at assignment.

3. Forum view forum - looking at forum(which usually contains many

discussions).

4. User view - viewing a user profile.

5. Forum user report - viewing a report of forum activity.

6. Resource view - resources are anything from the first dropdown when editing a

course(links, files, web pages, etc...).

7. Journal view - looking at a journal entry.

Post Activity

1. Journal add entry - actual journal entry

2. Forum view discussion - Reading actual posts in a threaded discussion within a

forum.

3. Forum add post- posting to a forum

4. Forum add discussion - adding a new discussion topic to an existing forum.

5. Upload - uploading a document or assignment to the site.