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Perceptions of Blended Learning: A Case Study on Student Experiences in an Advanced Placement Macroeconomics Course

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PERCEPTIONS OF BLENDED LEARNING: A CASE STUDY ON STUDENT

EXPERIENCES IN AN ADVANCED PLACEMENT MACROECONOMICS COURSE

by

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DEDICATION

It is with the deepest gratitude and love that I dedicate this dissertation to my family. It is because of all they have sacrificed for me that I was able to accomplish this feat. Without the love and support of my wife, Kara, I am sure that I would not be here. She has been my rock, my confidant, and my biggest supporter. This dissertation is also dedicated to my two beautiful daughters, Zoe and Ava. They have had to endure many nights without daddy there to tuck them in, and they were always there to give me the hug I needed to go on. I love you all.

Finally, I would like to make a special dedication to my mother, Anita, who passed while I was in the doctoral program. My mother never understood all that I was going through, but I know she is looking down on me with a great deal of pride.

ACKNOWLEDGEMENTS

ABSTRACT

The purpose of this study was to use a case study design to examine the impact of a blended learning instructional model on students in an Advanced Placement (AP) Macroeconomics course. Using an instrumental case study design, the researcher investigated blended learning and students' perceptions of their own interactions with the materials as well as perceptions of overall performance in the course. The study also used grade point averages (GPA), LMS Usage Reports, and AP exam scores to triangulate with the interview data. The key factors influencing the students' views were discussed, an enhanced model of blended learning was proposed, recommendations for future research were made, and strategies and practices were offered.

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CHAPTER 1

STATEMENT OF THE PROBLEM

Introduction

It is the first day of pre-planning and Mr. Chevarie is going over his Advanced Placement (AP) Economics class roster. The first thing he notices is that there are 32 students enrolled in each section. These are the largest classes to which Mr. Chevarie has ever taught AP Economics. Delving deeper into the rosters, he sees a few names he recognizes from his underclass AP World History class, but there are many names he doesn't recognize. As he begins to familiarize himself with his students further, he looks over their transcripts. To his surprise he finds many students enrolled who have never taken an AP course before, and even a few who did not perform very well in their previous non-AP course.

Later that afternoon, Mr. Chevarie begins planning out the first unit of AP Economics. First, he must remove all the mandated testing dates from his calendar. Next, he eliminates the three furlough days that the county has implemented. Taking into account the Senior Class field trip, and the other Student Government events, another four days are gone from his semester calendar. Finally, Mr. Chevarie factors in a week of review for the AP exam. Unfortunately, Mr. Chevarie knows that these will not be the only events that impact his schedule. For now, he knows that at least four of his eighteen-week calendar has been lost.

Sitting quietly in his room, Mr. Chevarie laments the loss of instructional time for his students. He wonders how the simulations and classroom discussions will be impacted by such large numbers of students. He worries if he will be able to give his students, especially the ones who are moving up to AP for the first time, the individual attention that he knows they need to be

successful. He struggles with the reality that he may not provide his students with the level of instruction required for all of them to be successful on the AP exam this year.

Problem Statement

Unfortunately, scenarios like this play out at the beginning of semesters all across the country. As high school teachers already know, time is one element of which they have less and less, even as performance demands are increasing for their students each and every year. Teachers and students face mounting pressures to increase student achievement, all the while having less time for instruction in the classroom. Due to budget constraints, class sizes are increasing at a time in which they can least afford (Hampton & Barge, 2013). Open enrollment has further increased class sizes, while placing students who may not have the requisite background into Advanced Placement courses (College Board, 2013c; McAlister, 2013).

Schools are losing classroom instructional time at a point in history in which they can least afford. Expectations and requirements on teachers are becoming more challenging, while the time they have in the classroom is shrinking. Faced with this daunting task more and more teachers are moving to blend their courses (Barbour, Waters, & Hunt, 2011; Watson, 2008). Blended instruction has been touted as a viable instructional model that will increase student performance (Doo Hun & Morris, 2009; Osguthorpe & Graham, 2003). Although blended instruction research has focused primarily on higher education, blended learning is quickly being adopted at secondary levels (Barbour, et al., 2011; Watson, 2008). The question then becomes, is there a way that teachers can recapture lost instructional time through the use of blended instruction? Has blended instruction finally reached a point where it can deliver on the promises of expanding learning beyond the school walls?

Time and Learning Theory highlights the concept of time as the significant barrier to

learning (Bloom, 1974; Carroll, 1963). Unless students are afforded the time necessary for them to learn the material, they cannot be expected to learn the content presented. Building upon the Time and Learning theory, Bloom (1985) developed the theory of Mastery Learning. This theory expanded the time factor presented by Carroll (1963), to allow for mastery of content before moving on to the next conceptual area.

Developed in parallel with Mastery Learning, was Keller's (1974) Personalized System of Instruction (PSI). Keller's theory is an extension of the original reinforcement theory developed by B.F. Skinner (1968). Keller's PSI is similar to Mastery Learning in that it requires mastery in order to advance, and students may advance at a pace more in line with their needs. These theories were, however, largely pushed aside during the latter part of the 20th century. This is due, in part, to issues regarding costs. Adding instructional time, mastery and PSI learning models all incurred costs to school boards that were unacceptable (Karweit, 1985; Pennington, 2006).

Theories regarding blended learning strategies suggest that the shortcomings of implementing these previous theories can be overcome. Although there is no overarching theory of blended learning, many researchers have posited that by blending instruction those earlier theories can be realized (Alonso, Lopez, Manrique, & Vines, 2005; Beck, 2010; Doo Hun & Morris, 2009; M. J. Jackson & Helms, 2008; Pape, 2006). This is especially important for the struggling learner. Beiswinger (2009) found that blended learning can help the challenged learner have more time with the material, and thus the potential for increased performance.

Research Questions

The main research questions underpinning this study are:

1. What are Advanced Placement students' perceptions of their use of time in a

blended learning environment?

2. How do Advanced Placement students perceive their overall learning and
    performance in a blended learning environment?

3. What are the effects of a blended learning environment on student-student, and
    student-teacher discourse in an Advanced Placement course?

4. How do Advanced Placement students describe their overall experiences in a
    blended learning environment?

Purpose of the Study

The purpose of this study was to investigate the experiences of traditional and non-traditional AP students enrolled in an AP Macroeconomics course taught using a blended learning model. The study was aimed at discovering how different groups of students experience and perceive blended learning. Additionally, this study aimed at identifying factors that impact student perceptions of their learning and performance in a blended learning environment. As part of this study, aspects of time will be explored in order to gain an understanding of how students perceive their use of time in a blended environment. Finally, this study seeks to discover what themes emerge across a wide variety of student experiences.

Significance of the Study

This study focuses on blended learning at the secondary level which until recently has been largely neglected in the current research. As an instrumental case study, it is significant since there has been little research on blended learning at the secondary level. It is also significant in that it investigates the expansion of instructional time without the need for extending the school day, or changing the school calendar.

Although there has been some recent research at the secondary level, previous research

has pointed out the shortcomings in the area of secondary education (Barbour, et al., 2011; Drysdale, Graham, Spring, & Halverson, 2013; Graham, Woodfield, & Harrison, 2013; Halverson, Graham, Spring, Drysdale, & Henrie, 2014). Open enrollment and economic realities that school systems are facing are increasing class sizes at all levels. This is impacting AP courses that are designed specifically to have smaller class sizes (Hampton & Barge, 2013). This study also addresses a neglected area on the topic of time. Previous research into instructional time focused primarily on the elementary level (Harn, Linan-Thompson, & Roberts, 2008; Kneese, 2000; Yair, 2000). As a result of this study, teachers and administrators may better understand the way in which students perceive their performance in a blended course. This study will also help secondary school administrators and teachers understand how blended learning can be used to extend learning beyond the time constraints of the classroom.

Definition of Relevant Terms

Blended learning and *blended instruction* are terms that describe a formal education program in which a student learns at least in part through online learning with some element of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home. The modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience (Christensen, Horn, & Staker, 2013).

Face to Face (F2F) instruction is when the teacher and student are together in a classroom environment for instruction, and where teaching and learning takes place synchronously.

Brick-and-mortar school refers to the physical school or classroom in which instruction takes place.

A *traditional AP student* is defined as a student who has passed (70% or higher) an AP course that is considered the prerequisite for the current course in which he or she is enrolled in. A student is also *traditional* if he or she received a final grade of 80% or better in an Honors level course. A student who has taken a regular level prerequisite course must have received a final grade of 90% or better to be considered a *traditional AP student* (McAlister, 2013).

A *non-traditional AP student* is one who has failed an AP course that is considered the prerequisite for the current course in which he or she is enrolled. A student is also *non-traditional* if they received a final grade below an 80% in an Honors level course. A student who has taken a regular level prerequisite course is considered *non-traditional* if he or she had a final grade below a 90% (McAlister, 2013).

Allocated time is defined as the time that the state, district, school or teacher provides the student for instruction. *Allocated time* is sometimes referred to as *instructional time*, or *scheduled time* (Huitt, 2005).

Engaged time is defined as that time that the student is paying attention to the material. It is a subset of *allocated time* (Huitt, 2005).

Time-on-task is a further subset of *engaged time*, and refers to time spent on specific learning tasks (Huitt, 2005).

Aptitude is defined as the amount of time that a student needs to reach some criterion measurement of learning. This definition is based upon Carroll's (1963) Model of School Learning.

Perseverance is defined as the amount of time that a student is willing to spend on learning. Perseverance is also deemed to be a measurement of engagement within the Carroll Model of School Learning (Carroll, 1963).

Conclusion

The following chapters outline this study as is introduced in this preliminary chapter. Chapter two provides the current literature on blended learning, instructional time, and a historical background to the increased enrollment in Advanced Placement courses. It also provided the theoretical framework used to develop and evaluate this study.

Chapter three outlines the method used to investigate student perceptions and experiences in an Advance Placement course taught in a blended environment. Chapter four reports the findings of this study and address each research question in order. Finally the last chapter, chapter five, provides a discussion on the impact of this study and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

Introduction

The first part of this chapter traces the history of time and learning theories and places them in historical context. This chapter focuses on the changing views of time as a factor in learning, and addresses the model for time and learning used as the theoretical framework for this study. The second part of this chapter describes the development of blended learning within the framework of K12 education. It also addresses the theoretical framework of blended learning that was used in the class observed for this study. The final section of this chapter identifies the changes that have taken place within the Advanced Placement equity policy, and the impact that has had on student enrollment in these courses.

Conceptual Framework

In order to understand the role of time in education and the implementation of a blended learning environment, the use of conceptual frameworks is necessary. For the purposes of this study, Carroll's (1963) Model of School Learning (MSL) will serve as the conceptual framework for the role of time. The blended learning framework for this study will be based upon the research developed by Georgouli, Skalkidis, and Guerreiro (2008).

Model of School Learning

According to MSL, learning is a function of the extent a student actually spends learning and the amount of time needed to learn. Carroll's model is:

Degree of Learning = f(time actually spent/time needed)

Time actually spent means actually spending time on the act of learning (Carroll, 1963). There are certain factors that impact the time that students need for learning, and also time spent

learning (Anderson, 2000). Factors that impact *time actually spent* are students' aptitude, their ability to understand instruction, and the quality of that instruction. Aptitude is defined by Carroll (1963) as the minimum amount of time a student would need to reach some level of understanding. The higher ones aptitude, the less *time needed* to learn the concept. Ability to understand instruction can be thought of as interacting with the material in a specific and interesting way (Carroll, 1963). Quality of instruction is determined by the teacher in order to give instruction that is adapted for the special needs and characteristics of the learning, including a student's current stage.

　　Time actually spent is a function of two other factors, opportunity and perseverance. Carroll (1963) stated that time actually spent learning;

> will be equal to the smallest of the following three quantities: (1) opportunity – the time allowed for learning, (2) perseverance – the amount of time the learner is willing to engage actively in learning, and (3) aptitude – the amount of time needed to learn, increased by whatever amount necessary in view of poor quality of instruction and lack of ability to understand less than optimal instruction (p.730).

　　Where Carroll's model impacts school reform is in the redefining of aptitude in terms of the amount of time a student needs in order to learn (Anderson, 2000). As Anderson (2000) states,

> If aptitude is indeed capacity to learn, why change schools? No matter how schools are configured, no matter what curriculum is taught, no matter how teaching proceeds, students with the necessary capacity will learn while those without it will not. It is only

when aptitude is defined in terms of time needed to learn that increasing opportunity to

learn can be justified (p. 17).

Within this model, students would not be characterized as smart or dumb, gifted or disabled

(Berliner, 1990; Harnischfeger & Wiley, 1985). Such terms associated with academic aptitude do

not apply when aptitude is defined as the time it takes a student to learn something (Berliner,

1990; Gettinger, 1984).

Carroll's model is not without detractors (P. W. Jackson, 1985; Phillips, 1985; Scriven,

1985). Carroll (1985), himself, pointed out three areas where criticisms have originated. He

noted that these could be classified as; criticism of the philosophical basis of the model, its

underlying theory, and its efficacy or practicality (Carroll, 1985).

Blended Learning Theoretical Framework

Georgouli, Skalkidis, and Guerreiro (2008), developed a theoretical framework for

blended learning that has four components. These components are: Administration, Content,

Activities and Community (see *Figure 1*). Each of these components is incorporated to enhance

learning, and is informed by the other components. Each component consists of tools devoted to

motivate students, assist interaction, and promote production of new knowledge (Georgouli, et

al., 2008).
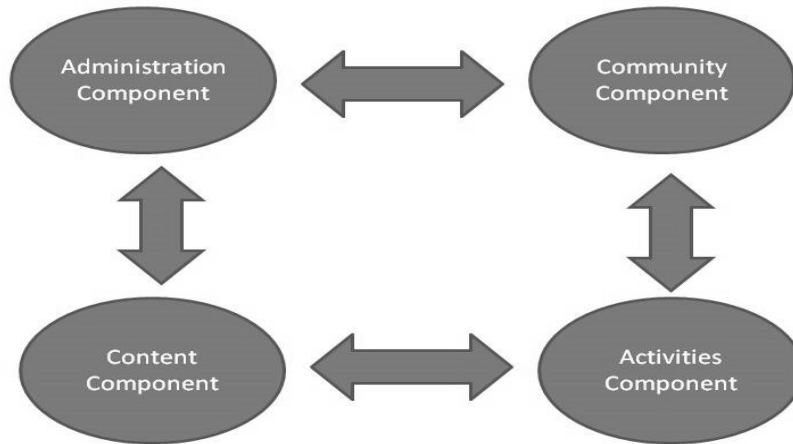
Figure 1 Theoretical framework (used with permission from Katerina Georgouli)
(Georgouli, et al., 2008)

The Administrative component contains the tools necessary for collection of important

statistical information, but does not impact the pedagogical delivery directly (Georgouli, et al.,

2008). The data collected from this component is, however, used to evaluate and modify

instruction for future course delivery. The Content component contains the learning tools such

as; content delivery, lecture notes, and assignment directions. The Activities component

contains; assessment exercises, assignments and projects, lesson plans and simulations. These

two components provide the information to the students; however technology allows that

delivery to be in new and innovative ways. Finally, the Community component contains such

tools as forums, chats, announcements, news, and social media. Students must feel that they are

supported by their peers, and their teacher, when interacting online. Students must feel safe and

supported when interacting within the confines of this component (Georgouli, et al., 2008).

Instructional Time

As the economy has taken a downturn, school districts have implemented furlough days to lessen the financial burden of school systems (CCSD, 2011). This solution to funding shortages, however, is not the only time leak that schools face. Clubs, sports, and other extracurricular activities also take students and teachers away from the classroom and impact overall instructional time (Impara, Enders, & Beecham, 1996). Working in conjunction with the extracurricular loss of time is the shifting focus to more and more standardized testing as well as other state and district mandated services (Assembly, 2010). A survey conducted by the Wisconsin Association for Supervision and Curriculum Development found that teachers felt that the administrating of standardized tests disrupted the educational flow on the classroom (Zellmer, Frontier, & Pheifer, 2006). Nebraska conducted a survey that the average student missed approximately four class periods a year due to extracurricular activities alone (Impara, et al., 1996).

Although the concept of instructional time has been in the academic vernacular since the 1960's, there have been multiple definitions put forth over what should constitute instructional time (Carroll, 1963). In Figure 2, Huitt (2005) developed his mode for the levels of time. The first three levels, school year length, attendance for year, and school day length are all variables that are out of the hands of the individual teacher. The remaining levels, however, are within the domain of the classroom teacher and need to be properly defined.
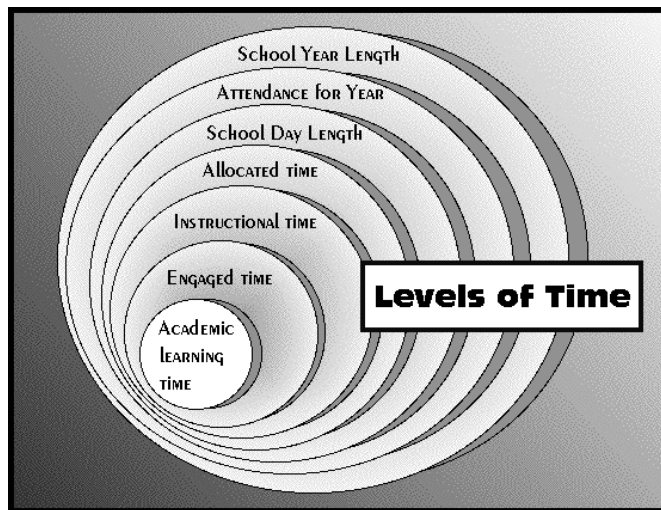
Figure 2 Levels of Time (Used with permission from William G. Huitt)
(Huitt, 2005)

For the purposes of this study, the definitions put forth by Gettinger and Seibert (1995)

for the terms *allocated time* and *instructional time* will be used. This study will investigate

allocated time because, according to Gettinger and Seibert (1995), "*allocated time* is the amount

of time teachers plan to use or allocate for instructional activities" (p. 2). *Instructional time* is

"the proportion of allocated time that is actually used for instruction" (Gettinger & Seibert, 1995,

p. 2). Although *engaged time* and *academic learning time* are important variables in the

instructional time paradigm, they are beyond the scope of this study.

Prior research into instructional time has met with mixed reviews regarding the impact of

increased achievement (Harn, et al., 2008; Karweit, 1976; Lomax & Cooley, 1979). One of the

major stumbling blocks that faced proponents of increasing time to increase achievement was

costs (Karweit, 1985; Pennington, 2006). Technology, however, has advanced greatly since the

time that these researchers were publishing. Blended instruction has the potential to increase

instructional time, without greatly increasing overall costs to the school system. Blended

instruction also has the potential to impact productive time by designing lessons that are

differentiated by student and accessible when and where the student most needs them (Walberg, 1988).

In determining whether or not to blend a course, the differences in higher education and secondary education are great (Means, Toyama, Murphy, Bakia, & Jones, 2009). For the higher education model to be effective, it must save both time and money for the institution and students (Means, et al., 2009). It must be convenient, flexible, and provide immediate feedback (Shana, 2009). In the post-secondary model of blended instruction, face-to-face instructional time is reduced (Beck, 2010; Lin, 2008). Herein lays the major differences in the two educational models of blended instruction. At the post-secondary level, face-to-face instructional time is diminished by the blending of online and face-to-face instruction. This is not to say that the instructional level is diminished, far from it. In fact, many researchers have shown just the opposite. In a study performed by Hughes (2007), learners at risk of dropping out of school were shown to improve their coursework submissions and overall module retention without increasing the necessary instructional time. Another study found that students in blended learning groups had significantly higher achievement when compared to a traditional learning group (Lim, Kim, Chen, & Ryder, 2008).

Under the traditional model of school instruction, time is the finite resource which must be reconfigured (Lofty, 2000). This finite resource impacts the way in which students experience their academic life, and shapes with whom they engage and how they value education (Lofty, 2000). It is how students perceive time that differs, and this perception impacts how they assign meaning to the tasks being completed (Lofty, 2000). Learning, however, becomes subservient to the time schedule of the brick-and-mortar traditional school (Minicucci, 2000). However, breaking this traditional time constraint allows students to explore new ways of learning (Fish,

2000). In Minicucci's (2000) study of exemplary cases, she found that time is not only protected but extended. Building on Minicucci's work, the Center for American Progress (2006), recommended ten best practices for extending learning time which included: Attention to the transition between middle and high school; organization of school days to allow expanded time for core academic subjects; extra time devoted to helping students stay "on track"; opportunities for accelerated advancement; attention to performance standards for college and work; use of technology for distance learning and customized instruction and feedback; expanding place, opportunities to learn outside the classroom; opportunities to earn money and college credit; teacher guidance/school involvement in student's external learning; and use senior year differently. Of particular importance for this case study are the "use of technology for distance learning and customized instruction and feedback" and, "expanding place, opportunities to learn outside the classroom" (Pennington, 2006, pp. 19-20).

The model for blending a secondary course is necessarily different from the one implemented at the post-secondary level. These models designed to address a completely different set of problems and challenges. At the secondary level, time becomes an essential factor in the educational equation. Time, or more specifically instructional time (Carroll, 1963) is not a factor that the teacher has complete control over. Time at the high school level can best be summed up as follows;

> Time is a limited school resource and, in high schools, is structured according to both
> school and student schedules. Teachers' schedules set the maximum amount of
> instructional time they will have for a particular class. Students' schedules set the
> maximum number of hours they will be exposed to that course material during the school
> day (Kubitschek, Hallinan, Arnett, & Galipeau, 2005, p. 63).

According to Kubitschek (2005), the average teacher has 75 hours of class time per semester to deliver content to the students. Another perspective breaks it down further when Beiswinger (2009) states that "each period can expect 12 minutes of quality instruction (p. 19)."

In his work on instructional time, Carroll (1963) found that even in the 1960's there was a problem with a lack of instructional time in the classroom. Carroll (1963) states, "it may come as a surprise to some to be told that the schools may allow less than adequate time for learning any task, but second thought will make one realize that this is very often the case (p. 727)." Other researchers have echoed Carroll's observations on the loss of time in the classroom (Clark & Linn, 2008; Coates, 2003; Karweit & Slavin, 1981). This loss of instructional time is only being exacerbated by the continued introduction of standardized testing, and other school related intrusions into the classroom (Hong, 2001).

Research on instructional time points out the loss of time in the classroom, but it also illustrates the link between instructional time and student learning. Carroll (1963) points out that although time is a factor in learning, one needs to realize that not every student will need the same amount of time to master a given topic. In developing his conceptual model, Carroll created a formula whereby the amount of time needed to learn is a function of their aptitude and the quality of instruction; however this highlights the problem with the current state of secondary education. A student may need more time, but the curriculum does not allow them that time (Hong, 2001). Carroll (1963) states, "if a person needs two hours to learn something and is allowed only one hour, and if we assume that learning proceeds linearly with time, the degree of learning is only 50 per cent" (p. 728). Karweit and Slavin (1981) found that an increase in 13 minutes of instructional time daily would increase student grades from a 3.4 to a 3.8. Growth such as this would be an important grade increase given the importance of standardized exams

today. However, Karweit and Slavin (1981) also state that since engaged time only runs about 50 to 75 percent of instructional time, class times would have to be increased by between 26 and 52 minutes respectively to increase engaged time by 13 minutes.

Blended Learning

Definition

What does it mean to blend instruction? Blended learning can be a problematic term to define, and those definitions vary greatly (Norberg, Dziuban, & Moskal, 2011; Vignare, 2007). There are those who argue that all leaning is blended, and this new term is just a *nom du jour* to be used in the new academic reality (Masie, 2006; Ross & Gage, 2006). In 2004, the Alfred P. Sloan Foundation convened a workshop in order to evaluate the published research on blended learning, and to formulate a working definition of the term *blended learning* (Picciano & Dziuban, 2007). As a result of this meeting, a basic definition of blended learning was adopted. According to the definition that this workshop adopted, courses are considered *blended* if they have two basic components:

1. Courses integrate online with traditional face-to-face class activities in a planned, pedagogically valuable manner.
2. A portion (institutionally defined) is replaced by online activity (Picciano & Dziuban, 2007).

Even at a basic level of defining the concept, there are differing opinions on the topic of blended learning (DeNeui & Dodge, 2006). One group of researchers use the term in its simplest form, where blended learning is any mixture of online and face-to-face learning (Chia-Wen, 2010; Delialioglu & Yildirim, 2007; Kerres & De Witt, 2003; Reasons, Valadares, & Slavkin, 2005; Williams, 2002). Building upon this basic definition, Georgouli (2008) created an

expanded definition and a theoretical framework for blended learning. The definition that she came up with expanded on the original Online Learning Consortium (formerly known as Sloan-C) definition and included the concept of event-based activities and self-paced learning (Georgouli, et al., 2008). Georgouli (2008) also developed a theoretical framework for designing a blended course that included an administrative, community, content, and activities components. Each of these components is designed to enhance learning, and inform the other components (Georgouli, et al., 2008).

The research from this faction of the blended continuum takes a rather myopic view of the entire concept. Simply combining online and face-to-face teaching, however, does not constitute blended instruction to a great many other researchers. Some researchers have attempted to quantify the amount of online activity that constitutes blended learning (Allen & Seaman, 2006). Allen and Seaman (2006) proposed that a course that has 0% of the content delivered online is considered a *traditional* course, 1-29% constitutes a *web-facilitated* course, 30-79% is a *blended/hybrid* course, and anything above 80% is to be considered *fully online*. Other researchers have stated that in order to be classified as a blended course, seat time must be eliminated (Dziuban, Hartman, Juge, Moskal, & Sorg, 2006). This definition has been used by universities to help dictate tuition costs for blended classes. However, according to Jay Cross (2006) this quantifying of blend is an oversimplification and not a useful way to define blended learning. In agreement, Ron Bleed (2001) stated that this definition is insufficient, and amounts to simply *bolting* technology onto a traditional course.

Bleed (2001) and others view blended learning as a paradigm shift in pedagogy and learning theory (Alonso, et al., 2005; Garrison & Kanuka, 2004). According to Garrison and Kanuka (2004), "blended learning inherently is about rethinking and redesigning the teaching

and learning relationship" (p. 99). This shift in educational thinking happens when the entire

course is redeveloped as a blended course, not just by having the online components added to the

course (Bleed, 2001; Lin, 2008). The shift then continuously develops as the blended course

morphs into a completely new pedagogical model. From one model in which time and space are

constants in the education equations to another model where mastery becomes the constant with

time and space as the variables (Pape, 2006). At this point, learning can take place wherever and

whenever the student happens to be (Engelbrecht & Harding, 2005b). The Clayton Christensen

Institute for Disruptive Innovation (formally Innosight Institute) adds another component to the

definition, by adding the additional components of modality and learning experience to the

original definition (Christensen, et al., 2013). This is an important distinction, as this definition

incorporates the learner. Once the course has reached this level of blending, the teacher becomes

less and less the central focus of the course (Alonso, et al., 2005), and the students become the

driving force in their own educational process (Pape, 2006; Watson, 2008). Once this happens,

the term *blended learning* becomes a boundary object, where the object holds together a larger

community of practice (Graham, et al., 2013; Norberg, et al., 2011). Looking at blended learning

as a boundary object allows there to be differing interpretations of the term. The Clayton

Christensen Institute proposed four modalities that utilize blended learning as a boundary object

(Christensen, et al., 2013). Of the four, it is the Rotational Model, with subcategories of Station

Rotation, Lab Rotation, and the Flipped Classroom (Christensen, et al., 2013) that is used in the

AP Macroeconomics course being studied. For the purposes of this research, the definition of a

blended course will be:

> Blended learning is a formal education program in which a student learns at least in part
>
> through online learning with some element of student control over time, place, path,

and/or pace and at least in part at a supervised brick-and-mortar location away from

home. The modalities along each student's learning path within a course or subject are

connected to provide an integrated learning experience (Christensen, et al., 2013, p. 9).

This definition was chosen because it incorporates all previous definitions, but places the

emphasis on the student. Blended learning, in this definition, is malleable and changes with the

needs of the learner. Previous definitions were static and fixed in their percentages of online time

and the necessity of reduced seat time. In a K12 environment, there is typically no ability to

reduce/remove seat time requirements. Any definition that has seat time reduction would not be

usable in this study.

Models

When comparing the post-secondary and K12 blended learning environments, the most

significant difference is in the area of seat time (Graham, et al., 2013; Picciano & Dziuban,

2007). In the implementation of a blended learning course, there are some similarities when

individual professors or teachers decide to move into a blended learning environment (Barbour,

et al., 2011; Beck, 2010; Chia-Wen, 2010; Mortera-Gutierrez, 2006; Stone, 2008). However, at

the post-secondary level, the decision to blend instruction is usually an institutional decision

(Graham, et al., 2013; Vignare, 2007).

Post-secondary institutions make the decision to implement blended learning based upon

factors such as: equivalency of instruction, costs, facility usage, convenience, and revenue

generation (Albrecht & Pirani, 2007; Graham, et al., 2013; Welch, 2007). It is imperative that the

new, blended learning, course be equivalent in learning experiences (Welch, 2007). Students

must believe that they are receiving the same level of instruction and rigor in a blended course

that they would in a traditional course (Beard, Harper, & Riley, 2004; M. J. Jackson & Helms,

2008; O'Toole & Absalom, 2003; Rovai & Jordan, 2004). Post-secondary institutions also make the decision to blend based on facility usage (Albrecht & Pirani, 2007). By implementing blended learning, these post-secondary institutions can offer more classes within the same facilities, thereby increasing revenue while cutting costs (Albrecht & Pirani, 2007; Welch, 2007).

Although the research into blended learning at the K12 level is exceptionally lacking, there are some distinct differences with post-secondary education that are noted (Drysdale, et al., 2013; Halverson, Graham, Spring, & Drysdale, 2012; Means, et al., 2009). One reason given is that budget constraints and teacher shortages have created a need for blended learning in order to meet the demands for increased results (Horn & Staker, 2011). These budgetary constraints are increasing class sizes while still holding the teacher to state and federal mandates (Assembly, 2012; Zellmer, et al., 2006). In order to work within this new norm, teachers and administrators began to look for new methods of instruction (Picciano & Seaman, 2007).

In K12 education, the Rotation Model is the predominant model in use today (Christensen, et al., 2013). Within this model falls the newest of all the blended models, that of the Flipped Classroom (Christensen, et al., 2013). In the flipped model, instruction and remediation take place online and practice or projects take place within the traditional classroom (Bergmann & Sams, 2012; Christensen, et al., 2013). The new blended models being created in K12 are leveraging the technology to increase student-teacher engagement by providing instruction online. These models then provide the teacher with more time to interact with the students (Bergmann & Sams, 2012; Staker & Horn, 2012)

Claims

Taking a page from their counterparts in higher education, more and more secondary teachers are experimenting with blended or hybrid instruction in their classrooms in order to

enhance their instructional models (Ferdig, Cavanaugh, & Freidhoff, 2012; Mortera-Gutierrez, 2006; Picciano & Seaman, 2007). Although the name is the same, the implementation and the impact that blended learning has at the secondary level is profoundly different from the model used in higher education. Of the little research that has been published on blended instruction at the secondary level, it focuses mostly on the implementation, not on the outcomes (Halverson, et al., 2012). Halverson et al. (2012) found that only 1.8% of the top-cited publications focused on the K12 setting. There is a dearth of research on blended learning in the K12 arena (Drysdale, et al., 2013; Halverson, et al., 2014; Means, et al., 2009). With that being said, both levels of education are migrating towards a more blended model of education (Means, et al., 2009; Picciano & Seaman, 2007). As the research on blended instruction consistently points out a lack of focus on the secondary level, it becomes necessary to investigate the research from higher education in order to extrapolate down to the secondary level (Beiswinger, 2009; Means, et al., 2009; Reasons, et al., 2005). The pedagogical models and methods incorporated at that level, while not always a perfect match, still provide the secondary educator some guidelines for implementation of a blended curriculum.

When properly configured within the conceptual models that have been developed (Christensen, et al.; Engelbrecht & Harding; Georgouli, et al.; Watson, 2008), blended learning has the capacity to extend the classroom discussion beyond the walls of the school (Lim, et al., 2008). According to Pape (2006), "blended learning enables classroom teachers to increase student learning opportunities beyond the school day and school year, more closely resembling the 24/7 model with which the current generation of students is most familiar" (p. 1). Surveys of students enrolled in post-secondary blended courses shine a light on this topic further. One student surveyed had particular insight into this pedagogical shift:

In a regular setting, we would have only discussed things in the allotted 1 hr and 15 min.

time slot. Now we have time to process and read everyone else's comments. The hybrid

class is giving us an opportunity to develop independent thinking skills. It is also giving

us the opportunity to learn the discipline by giving us deadlines for our discussions. I feel

like I have had an opportunity to learn something new. Students develop more critical

thinking skills in the class because the professor is not teaching it all the time (M. J.

Jackson & Helms, 2008, p. 10).

Robert Beck (2010), stated that by blending his course, his "students had already identified their

primary areas of difficulty with the material. Accordingly, [he] could focus [his] face-to-face

energies on those areas of greatest student difficulty" (p. 284).

Blended learning also has the potential to mitigate the impact of students being left

behind by the curriculum. This can impact both the high aptitude student, as well as the lower

aptitude student (Carroll, 1963). Doo Hun and Morris (2009) discuss the potential of making

both *macro* and *micro* decisions for individuals and individual learning differences within the

blended learning model. While these types of decisions can be made in a traditional class, the

blended model allows for greater personalization of learning material (Alonso, et al., 2005). For

the struggling or challenged learner, the blended model affords them the ability to spend more

time with the material (Beiswinger, 2009). By properly designing and implementing a blended

curriculum the secondary educator can allow for learners to control their own learning pace, and

have adaptive learning based upon their own learning traits (Wu-Yuin, Jung-Lung, Tretiakov,

Huey-Wen, & Ching-Yuan, 2009). Depending on the subject being taught, the teacher can use a

blended model in order to provide students with preview material, current material, or remedial

material that provides the necessary skills delivered when the student needs them most (Alonso,

et al., 2005).

Weaknesses

As with any new educational model there is a body of research that questions the prevailing thought. Where some researchers see benefits for additional time, increased student performance, and opportunities for engaged learning, others find areas for dispute. For many, the lack of empirical research into blended learning is extremely disconcerting (Drysdale, et al., 2013; Halverson, et al., 2012). Halverson (2012) in evaluating the 60 most impactful articles and 25 most impactful books, found that only eleven met the gold star standard. Even at the most basic level, researchers find that there are no acceptable standards as to what constitutes a blended curriculum (Delialioglu & Yildirim, 2007; Lin, 2008; Mondi, Woods, & Rafi, 2008). Kerres and De Witt (2003) comment on the fact that "blended learning…is still quite vague and does not provide a conceptual framework" (p. 101). O'Toole and Absalom (2003) in an interview with teachers found that, "teachers seem to imply that ICT possess magical powers to bring about amazing transformations in learners" (p. 187). Garnham and Kaleta (as referenced by Delialioglu & Yildirim, 2007) found that there were no common approaches or teaching methods used in the examination of five different universities. Given these issues, it is not surprising that Engelbrecht and Harding (2005b) stated; "it is difficult to compare the scope and extent of any two online courses because both might be lacking in certain, not necessarily the same, aspects and exceed again in other different, aspects" (p. 244).

Another area where there are detractors to the blended model is in the area of work load (Harding, Kaczynski, & Wood, 2005; Vaughan, 2007). Although researchers quoted earlier found that blended instruction gave their students the ability to review, work collaboratively, and extend their learning beyond the classroom others see this as increasing work for already

challenged students. Due to the 'newness' of blended instruction students can find themselves

confused not only by the technology, but by the requirements of the course (Reasons, et al.,

2005). Research shows that students moving into a blended course can have an increase in their

stress levels and a propensity to withdraw from the discourse instead of engaging in the material

(Georgouli, et al., 2008). Beck (2010) found that some students were "especially prone to falling

behind on their assignments….since the relative amount of outside-the-classroom work is

greater" (p. 282). This increased workload has the potential to cause the ill-equipped learners to

feel overwhelmed, and feel disconnected from the course (Delialioglu & Yildirim, 2007).

Although the research on this aspect is primarily from the arena of higher education, it would in

fact impact secondary blended courses in more significant ways due to the nature of secondary

education (Means, et al., 2009).

The research is further brought into question when looking at the issues regarding student

access to the materials. Given students financial and family status, access to computers or the

internet may be non-existent at home and only available at school (Stone, 2008). The inability to

use the technology, or even access the content, would put students at a distinct disadvantage

relative to their peers (Lin, 2008). If significant portions of the content or requirements of the

class are migrated to the web, how can students be expected to interact with the material (Beck,

2010)?

Finally, the research looked at the performance claims that have been made regarding

blended instruction. There is a great deal of research that shows no significant improvement

regarding the use of blended instruction over traditional methods (Lim, et al., 2008). Most of this

research is focused on the post-secondary model of blended instruction (Means, et al.), and fails

to evaluate the model used in secondary education. When evaluating blended instruction at the

post-secondary level, the concept of instructional time is not evaluated in regards to student

achievement (Delialioglu & Yildirim, 2007). In order for secondary models to be properly

evaluated for performance, researchers suggest that further research must be completed

(Christensen, et al., 2013; Drysdale, et al., 2013; Halverson, et al., 2012).

Expansion of Advanced Placement

Advanced Placement courses have seen an increase in the number of participants, the

number of schools offering courses, and the number of colleges who accept these courses for

credit (College Board, 2013b). Between 2003 and 2012, the number of students taking the AP

exam has increased an average of 8.7% annually (College Board, 2013a). Within the state of

Georgia, AP enrollment has increased 35% since 2007, while the total student population has

increased by 3% over the same time period (AP enrollment report, 2011). One reason for this

increase has to do with the College Board's (2002) *Equity Policy Statement*. It read:

> The College Board and the Advanced Placement Program encourage teachers, AP
>
> Coordinators, and school administrators to make equitable access a guiding principle for
>
> their AP programs. The College Board is committed to the principle that all students
>
> deserve an opportunity to participate in rigorous and academically challenging courses
>
> and programs. All students who are willing to accept the challenge of a rigorous
>
> academic curriculum should be considered for admission to AP courses. The Board
>
> encourages the elimination of barriers that restrict access to AP courses for students from
>
> ethnic, racial, and socioeconomic groups that have been traditionally under-represented in
>
> the AP Program. Schools should make every effort to ensure that their AP classes reflect
>
> the diversity of their student population (College Board, 2002).

The *Equity Policy Statement* formalized the College Boards push to increase access to AP

courses, and as such ushered in the age of open enrollment (McAlister, 2013). Although this statement helped to open the doors of the AP classroom, it was not the only factor.

Competition is another factor contributing to open enrollment and the expansion of AP programs nationwide. This competition factor is two-fold. First, competition between students for acceptance into college and secondly, competition between high schools for prestige (Hood, 2010). Some colleges began to use the mere enrollment in an AP course as a criteria for admissions, and AP course participation grew as school guidance counselors and students began to realize the importance of having an AP course on their transcripts (Burdman, 2000; Geiser & Santelices, 2004; Klopfenstein & Thomas, 2009).

The competition, however, extends beyond the individual student and encompasses the school and the school district. For example, Jay Matthews (2013) publishes his annual ranking of America's most challenging schools. The ranking is calculated by a summation of all the AP, International Baccalaureate, and Advanced International Certificate of Education enrollments divided by the number of graduating seniors. In addition, to increase the number of students who take the AP exams, some school districts have partnered with The College Board to increase open enrollment opportunities (Lindauer, 2013). The state of Georgia uses Advanced Placement data as one of the indicators for the *College and Career Ready Performance Index (CCRPI).* This information is used to compare schools, and to identify exemplary schools or school districts (Barge, 2012).

Conclusion

This chapter established the theoretical framework necessary to complete this study. It also provides a backdrop for understanding the changing demographics within the Advanced Placement classroom. It further helps to define time as a factor in learning, and to define blended learning within the scope of the K12 environment.

CHAPTER 3

METHODOLOGY

Introduction

This study seeks to investigate the perceptions and experiences of Advance Placement students in a blended learning environment. A qualitative instrumental case study design was employed as the methodology for this research study in order to understand how blended learning would impact student perceptions. This study is an instrumental case study because it is the interaction between the participants and the curriculum that this researcher wished to gain an understanding of. A maximum variation sample was used to provide the largest variation of information for this study.

Study Background

High schools are quickly changing to meet the new realities imposed upon them by current economic, political, and social factors. Time is one element that teachers and students have less and less of, even as the demands for increased performance are being ratcheted up. Advanced Placement (AP) courses are seeing an influx of students who have not traditionally taken AP courses in the past due to increasing competition for college entrance. This is placing even more pressure on teachers to maintain, and in most cases exceed, performance levels (College Board, 2002). Blended instruction has been touted as a viable instructional model that has the potential to increase student performance (Barbour, et al., 2011; Doo Hun & Morris, 2009; Ferdig, et al., 2012; Osguthorpe & Graham, 2003). Although research into blended instruction has focused primarily on higher education, blended learning is quickly making inroads at the secondary levels of education (Drysdale, et al., 2013; Halverson, et al., 2012; Halverson, et al., 2014). The question then becomes, is there a way that teachers can use the

technology to recapture lost instructional time, and can a blended learning model help non-traditional Advanced Placement students be successful?

Using a social-constructivist approach, which views society as constructed by the relationships forged between individuals, an instrumental case study was selected as the qualitative model for this research (Gagnon, 2010; Stake, 1995; Yin, 2009). An instrumental case study aims to use the particular case to further understand something else (Stake, 1995; Yin, 2009). Gagnon (2010) provided four points that should be considered before embarking on a case study model. First, can the phenomenon be studied outside its natural setting? Second, does the study focus on contemporary events? Third, is control of the subject or events unnecessary? Finally, does the phenomenon enjoy an established theoretical base upon which to build? In the case of this study, all were answered in the affirmative; thereby, inviting a case study.

A qualitative case study is a holistic description and analysis of a singular entity, phenomenon, or experience. Case study methods are used when the researcher desires to develop a descriptive and heuristic account of a specific situation (Merriam, 2009). When using vivid details to describe the phenomenon being studied, the case study is deemed to be descriptive (Merriam, 2009). This case study was considered to be heuristic in that it gave the reader an understanding of the phenomenon in question (Merriam, 2009).

A case study is an exploration of a 'bounded system', whose defining features are the boundaries that establish the parameters of the study (Creswell, 2014; Merriam, 2009). For this research, the bounded system referred to the students from Berlin High School who were enrolled in an Advanced Placement Macroeconomics course. This study was framed within an ontological philosophical assumption. Ontological studies relate to the issues of what is the nature of reality (Creswell, 2013).

An instrumental case study was chosen for this study because the goal was not to understand the unique case itself, but to understand something else (Stake, 1995). The case, in this study the AP Macroeconomics course, facilitates the investigation of an external interest. For this study, that external interest was the impact of blended learning on traditional and non-traditional AP students. An instrumental case study is employed when there is an expectation that the results can be used to develop a theory further (Stake, 1995; Yin, 2009). Yin (2009) describes an instrumental case study as one where the case is chosen in order to challenge, confirm, or extend the underlying theory, which was the goal of this study.

Research Questions

The purpose of this study was to explore the experiences of Advanced Placement students within a blended instructional model situated in a high school context. Research studies concerning instructional time show that increased exposure to content will increase student performance (Bloom, 1974; Guskey, 2007). Research studies on blended instruction have shown that providing both face-to-face and online instruction increases student performance (Doo Hun & Morris, 2009; Osguthorpe & Graham, 2003; Reasons, et al., 2005). The final issue the current study investigated is the increase in non-traditional students within an Advanced Placement curriculum (College Board, 2002). The increased enrollments and lack of adequate academic background are further impacting both students and teachers (McAlister, 2013). The research focus on the impact of instructional time is almost exclusively on the elementary level, while research in blended instruction focuses predominately on post-secondary students (Clark & Linn, 2008; Coates, 2003; Drysdale, et al., 2013; Halverson, et al., 2012; Harn, et al., 2008). Due to the dearth of research in both blended learning and instructional time at the secondary level, this study aimed to answer the following questions:

1. What are Advanced Placement students' perceptions of their use of time in a blended learning environment?

2. How do Advanced Placement students perceive their overall learning and performance in a blended learning environment?

3. What are the effects of a blended learning environment on student-student, and student-teacher discourse in an Advanced Placement course?

4. How do Advanced Placement students describe their overall experiences in a blended learning environment?

An instrumental case study was used as the qualitative model for this research study. The study was bound by enrollment in the Advanced Placement Macroeconomics classes taught at Berlin High School in Berlin, Georgia, United States of America.

Research Setting

The setting for this study was a high school with approximately 2,100 students located in the suburbs of a large Southeastern city. All participants have been assigned pseudonyms, as well as the school in order to ensure confidentiality. Confidentiality relates to the extent that the researcher attempts to protect the participant's private information. Berlin High School is approximately 73% White, 14% Hispanic, 9% African American, and 1% Asian. Forty 12th grade students were enrolled in two sections of AP Macroeconomics. The demographics of these classes were 93% White, 6% Latino, and 1% African American. Of the 40 students in my class, 38% were identified as gifted, with 5% being identified as special education students. Approximately 7% of the students met the definition as non-traditional Advanced Placement student (McAlister, 2013). As defined in Chapter 1, a non-traditional AP student is one who has failed an AP course that is considered the prerequisite for the current course in which he or she is

enrolled. A student is also non-traditional if they received a final grade below an 80% in an

Honors level course. A student who has taken a regular level prerequisite course is considered

non-traditional if he or she had a final grade below a 90% (McAlister, 2013).

Students who were classified as non-gifted, or who were defined as non-traditional

Advanced Placement students were recommended for the course by their previous social studies

teacher. However, with changes to the Advanced Placement program as describe in the previous

chapter, these recommendations are no longer a requirement (College Board, 2002). The policy

at Berlin High School for enrollment into an AP course is for the students' current teacher to

recommend them for a particular course. If, however, the student wants to attempt an AP level

course and they were not recommended they can meet with the AP teacher who can override the

previous recommendation. With my AP Macroeconomics course, all students who were not

recommended meet with me personally for a transcript review and an informal interview. During

this interview, I explain the course load and attempt to gauge their motivation for wanting this

course. From this, I enroll approximately 80% of the students who have requested the course.

Although this has, at times, increased my class size it is important to me, and the school that I

give students the opportunity to challenge themselves.

Berlin High School is the flagship school in the district and was built in the early 1950's.

Like most of the schools built in that time period it doubled as a nuclear fallout shelter. It has a

very institutional look, with long hallways of white cinder block walls stretching the length of

the one story school. Off the main hallway are perpendicular hallways that house the classrooms.

In the main building there are four of these hallways, creatively numbered 100-400 halls. It is in

the 400 Hall where the research study took place. Because Berlin High School was expanded

upon multiple times, the classroom are not of uniform size, or even shape. Some classrooms are

tiny, barely able to house ten student desks and a teacher desk. Others are massive, easily accommodating thirty-five student desks, a teacher desk, and extra cabinets.

It is in one of these larger classrooms that I have my class. Because of the nature of the AP Macroeconomics course, there are no desks in this classroom. Tables are the preferred seating arraignment in this classroom by both the students and myself. I designed this setup to promote collaboration between the students. The classroom encourages students to freely move about when they are working to best facilitate their understanding. I do not assign seats in the class, as students are free to work with any of their peers on any given day. At times, students work in large groups brainstorming solutions and bouncing ideas off each other. Other times, the students work individually only approaching their peers for validation. Students were also on their mobile devices looking up information, or watching videos designed to provide them with a deeper understanding of the concepts they are working on.

The district has made technology a priority over the last decade. All classrooms are equipped with interactive white boards, all teachers have laptops, and the building has had its wireless connectivity upgraded to withstand the increased demand. Recently, the district has installed video conferencing systems in each of the schools to further foster collaboration. My classroom houses this video conferencing system, and it is used to facilitate connections between the students and outside resources. An example of this was when my AP Macroeconomics had a video conference with a high profile accountant that I know to discuss budgeting and saving concepts. The study classroom has fifteen desktop computers, a laptop cart that houses twenty-four laptops, and is also where the video conferencing system is housed. The district adopted a Bring Your Own Technology (BYOT) program two years ago. This program allowed all students to utilize their own devices (smart phones, tablets, laptops, etc.) to access content. The BYOT

program is at the discretion of the classroom teacher, who can determine when the students may use the technology. The students in my class have the ability to use all the technology available to them at any time during the course. In fact, the students are encouraged to find the information and then share it to the whole group. Technology use in my classroom is transparent and pervasive; it functions as in integral part of the instructional experience.

Sample Selection

In a qualitative case study, two levels of sampling are usually required. The case, itself, acts as one level of sampling (Merriam, 2009). A convenience sample was used as the first level of sampling (Miles & Huberman, 1994; Patton, 2001). At Berlin High School, there are twelve AP courses that utilize a blended learning model. I chose my own class as the case study for multiple reasons. First, and foremost, I have been using a blended learning model in my classes for approximately eight years. This extensive experience with the model allowed me to be more flexible within the classroom and comfortable within the model. I also chose my own class as the case because AP Macroeconomics has a high level of non-traditional AP students. Although a convenience sample is never purposeful or strategic, the choice of this class allowed me to act as a participant observer (Patton, 2001; Yin, 2009). As a participant observer, I was able to frame the study in a way that was both sensitive and responsive to the subtleties and unanticipated moments within the classroom environment (Wong, 1995). As Margaret Queenan (1987) has stated, the need for participant research has been called for since the mid 1970's. Even in the early portion of the 20th century, Chamberlain (1921) called the actual classroom testing of problems to be more valuable and scientific than more traditional research models. As such, participant researchers are able to provide an insider's perspective into the classroom (Kennedy-Lewis, 2012). This is due, in large part, to their intimate understanding of their own students,

content, and school environment (Klehr, 2012; Nixon, 1987).

It was important to me that I used my own class for this study. I, like Wong (1995), believed that I had a unique interpersonal relationship with my students that would not be duplicated in another classroom. I was able to leverage my knowledge of my own students, the content, and blended learning in ways that another classroom would not have afforded me. This type of research model allowed me to build upon the trust that my students already had in me, and develop that level of trust so that they felt comfortable enough to be forthcoming in their interviews.

Participatory research is not without its detractors, however. Because participant researchers are spanning multiple roles, there are opportunities for ethical and practical conflict (Cochran-Smith & Lytle, 1999; Klehr, 2012). As a participant researcher, I am subject to making value judgments regarding my students' performance in the course (Costley & Gibbs). Wong (1995), discussed how this challenge impacted his own participant research activities. Due to the very nature of teaching, Wong (1995) argued that it is extremely difficult to maintain careful design and systematic procedures necessary for research. Of particular interest to this study, Wong (1995) realized he needed to fundamentally shift his classroom to a new culture where extended teacher-student interactions become the norm.

As a participant researcher, I found that I had to weigh my role as the researcher against my role as the classroom teacher (Wong, 1995). AP Macroeconomics has two summative exams that are administered at the end of the year. The first is the state mandated End of Course Test (EOCT). This assessment is designed to test the students' knowledge of the state economics standards. These test scores are public record, and are posted on the state Department of Education's website. These scores are also used within the district to motivate teachers, and for

prestige among the principals. As with the EOCT, AP Macroeconomics also has the AP exam that is administered in May. Here again the scores are a matter of public record, and pride for the school. It is under this level of scrutiny that I had to weigh my role as a researcher and a teacher. However, the implementation of blended learning in the classroom helped to mitigate some of this conflict. Because the class is already taught using a blended model, I was not changing the instructional method in my own class; I was only evaluating how the participants experienced my current instructional method. In terms of my interactions with the participants, I did not change any aspect of my methods. I differentiated instruction in the same way for this class as I had for all previous courses. My formative and summative assessment policy was exactly the same as prior semesters as well. The ELP format and rubric were the exact same ones as my previous AP Macroeconomics courses. As a result of the fact that I was not implementing a new curriculum or method, I was more aware of the subtleties within my classroom. I could focus more on both the verbal and non-verbal communication present in my participants. To better facilitate this, I kept a reflective journal where I documented these interactions. An example of this journal can be found in Figure 3.
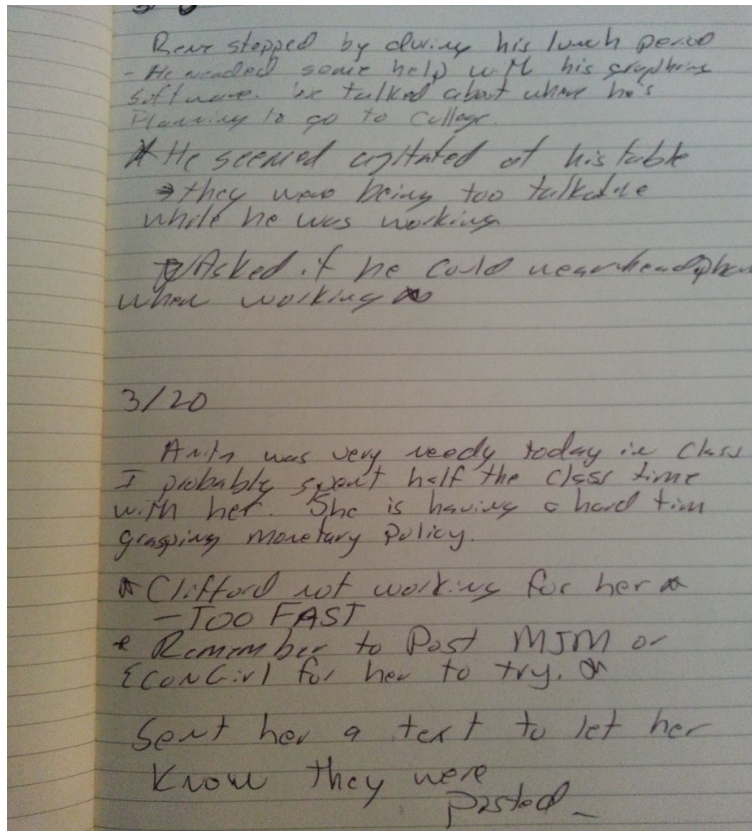
Figure 3 Reflective Journal

Within the sampled case, further purposeful sampling was used. This study did not

include all students who were enrolled in the Advanced Placement Macroeconomics course, so

further sampling had to be incorporated (Merriam, 2009). To create the final participant pool, a

maximum variation sampling technique was employed in this study. Maximum variation

sampling allows for the small sample size to evaluate a great variation, and to capture the central

themes that cover a wide swath of the participants (Patton, 2001). Eight student participants were

selected because they represented the greatest variation of students enrolled in the Advanced

Placement Macroeconomics course (Patton, 2001). This maximum variation allowed the

researcher to evaluate not only the detailed uniqueness of each participants experience, but also

provided insight into the shared experience of the participants (Emmel, 2013). This type of

sampling does not attempt to generalize the findings, but seeks to highlight both the variation and the common patterns in the experience (Emmel, 2013; Patton, 2001). At the school where the study was conducted, no honors-level economics courses are offered. Students must choose between an on-level economics class and an Advanced Placement class. As part of the enrollment procedure at Berlin High School, students have their current grade level teachers recommend them for the next year's courses. Normally, the students enroll in their recommended course. Occasionally, however, students may choose to enroll in a course that is not their recommended course. Before any student who was not recommended can enroll in the AP Macroeconomics course, they must meet with me personally. As part of the screening process, I go through their transcripts and discuss with them what workload they can expect. I also ask them about their work ethic, and why it is they want to take this course. For some it's the desire to have an AP course on their transcript before they apply to college. For others it is because they have heard good things about me as a teacher, or about the course itself. Others want to be in a class with their friends, or the class fits their schedule better. A small few have also noted that they really don't particularly like being in on-level courses because of the wide spectrum of students. As the College Board® and the district both push for more inclusive AP enrollment, I do not have a specific guideline as to which of these students I let into the class. If they balk at the workload, I usually recommend another course. But if they are adamant that they want in the course, I more often than not allow them in. In the four years I have been teaching this course, I would garner that I have a dropout rate of around 2%.

In order to create a maximum variation sample, I first divided the students into two groups. The first group was comprised of my traditional AP students. As defined in Chapter 1,

A *traditional AP student* is defined as a student who has passed (70% or higher) an AP

course that is considered the prerequisite for the current course in which he or she is

enrolled in. A student is also *traditional* if he or she received a final grade of 80% or

better in an Honors level course. A student who has taken a regular level prerequisite

course must have received a final grade of 90% or better to be considered a *traditional*

AP student (McAlister, 2013).

The second group was non-traditional AP students. As defined in Chapter 1,

A *non-traditional AP student* is one who has failed an AP course that is considered the

prerequisite for the current course in which he or she is enrolled. A student is also *non-*

traditional if they received a final grade below an 80% in an Honors level course. A

student who has taken a regular level prerequisite course is considered *non-traditional* if

he or she had a final grade below a 90% (McAlister, 2013).

This group was by definition the smaller of the two groups. As discussed earlier in this chapter,

non-traditional students must meet with me before they are allowed to enroll in the course.

Although I do let most who would like to be in the class enroll, this is still a much smaller group

than the traditional AP students.

Participants

Once all students were separated into these two groups, academic transcripts were

evaluated in order to create the greatest possible variance in the case study participants. I looked

at the students' previous course choices, their previous grades in those courses, and the level of

the courses (whether AP, honors, or regular). From this analysis, I chose the eight participants,

four traditional AP students and four non-traditional AP students. Participants were evenly

distributed across the two sections, and included five male students and three female students.

Only one of the participants had taken a course with me previously. Two special education students participated in the study, one in each section. This selection allowed for the maximum variation sampling of student participants (Patton, 2001).

Non-Traditional AP Students

Of all the non-traditional students, Leo was the most convenient to include in this study. His academic background made him a prime example of a non-traditional AP student. The other non-traditional students chosen for this study were a mixture of students who wanted to challenge themselves, student who did not want to take the on-level economics course, students who wanted an AP course on their transcript, and one whose parents were pushing him to take AP courses in his senior year. Each of these students met the criteria of a non-traditional student and as such was added to the study. Each of the non-traditional students is described in detail in the following section.

Rene. Rene was an 18 year old male, non-traditional AP student, who was also identified as special education. He was a very good student that had an extensive Individualized Education Plan (IEP). Rene's IEP addressed his nonverbal learning disability, dyslexia, and dysgraphia. As part of his IEP, he used a computer to create all assignments, as well as any graphs that were required for the course. Rene had a GPA of 3.25 on a 4.0 scale. This was the first year that Rene had attempted the rigor of an AP course, so he had some reservations. Rene is a very interesting student. He has an extremely dry sense of humor that comes across in almost every comment that he makes. He is also extremely blunt and gets to the point very quickly. He doesn't tolerate a lack of understanding very well, and can at times get defensive and shut down emotionally. Rene is a talented musician, and as such strives for perfection in every endeavor, and at times this produced a great deal of stress for him. Rene and I developed an understanding based around his

sense of humor. I have a similar type of humor, and it seemed that Rene appreciated it. That

connection helped Rene to come out of his shell and allow me to support his learning. Rene

related in one of many informal conversations we had during the course that he had applied to

local state universities. The universities that Rene applied to were all classified as Master's L on

the Carnegie Classification™(Carnegie Foundation, 2014).

   Matt. Matt was also an 18 year old male, non-traditional AP student. Matt's academic

transcript highlighted his status as an overall good student who on occasion had challenged

himself in honors courses. His transcript is populated with scores between 75% and 85% in the

classes he has previously taken. His unweighted GPA was a 3.2 on a 4.0 scale. Although he had

attempted a few honors level courses, he had not been overly successful in these courses. It was

obvious to me from our conversations that Matt is a very well-rounded young man; however it

seems that Matt doesn't want to be classified as *the smart kid*. He comes across as almost trying

too hard to make sure that people don't think he is smart. He projects an "I don't care" attitude,

but it feels forced from my interactions with him. When working in class, he rarely worked with

a group, and almost always finished his work before the majority of the class. I made note of this

attitude in my field notes on multiple occasions, and documented after each interview. It was

also prevalent in Matt's formative and summative assessments. Matt would stop taking the

formative assessments as soon as he reached a grade that was above passing, but not exceptional.

The same trend was evident in his summative assessments. Matt was also applying to colleges,

but was not applying to top level universities. Matt applied to smaller state colleges because he

didn't think he would be accepted by larger universities. Matt applied at schools that were all

classified as Master's L (Carnegie Foundation, 2014).

   Leo. Leo, another 18 year old male non-traditional AP student, was a student who had,

more often than not, taken Career/Technical (CT) courses. His unweighted GPA was a 2.75 on a 4.0 scale. He had attempted some honors level courses and struggled to keep an average score of 80% in any of them. He had done extremely well in his CT courses, scoring well above 95% in all of them, but in his core academic classes was only able to maintain averages in the 80% range. Leo reminded me a great deal of myself at that age. In one of the many informal conversations that we had during lunch Leo told me that he has realized that the next level of education does not work for him at this particular moment. During his career at Berlin High School, Leo was able to achieve multiple welding certifications. Leo's plan is to spend his first year after graduation working for a welding firm, and then deciding if he wants to attend a local community college. I doubt that Leo will attend college at all. In our many lunch time conversations, it became apparent to me that Leo really did not feel that college was a necessary part of his future. He didn't believe that he needed college to be successful financially in the future. He has no plans to attend a traditional four-year post-secondary institution at this time. He believes that he can make a good life for himself as a welder, and he is content in that knowledge.

Zoe. Zoe was an 18 year old female non-traditional AP student who was also taking her first AP course in her senior year of high school. Zoe, however, had taken some honors courses, but none were in the Social Studies track that would have led her to AP Macroeconomics. She had done well in the honors classes she attempted, keeping her scores within the low 80% range. Her unweighted GPA was a 3.1 on a 4.0 scale. However, as she went through her high school career, her grades dropped in most core academic areas. Zoe was a cheerleader for both football and basketball. Berlin High School has separate cheerleading squads, only a select few are chosen for both. Zoe also had a waitressing job at a local restaurant where she worked Thursday

through Sunday nights. She was a hard worker in the class, but at time I observed that her mind seemed to be elsewhere. Whether that was on an upcoming sporting event, her afterschool job, or on other course work was rarely apparent, but it was apparent from my classroom observations that she was not 100% focused on the AP Macroeconomics coursework. She also seemed extremely tired at times, occasionally fighting to stay awake in class. The combination of school, work, and extracurricular activities put a great deal of stress on her physically and mentally at times. Zoe applied to specifically to local state universities and was accepted at a local university that is classified as Master's L (Carnegie Foundation).

Traditional AP Students

The traditional AP students chosen for this study were the four students who best exemplified the definition. They had all taken a highly rigorous academic course load throughout their high school career. They all had grades well above 90% in these courses, and all had taken multiple AP or honors courses in the past. Of all the traditional students, Roger was most straightforward inclusion in the study. His academic background and grade point average were at the top end of what is defined as a traditional AP student. His weighted GPA, which included additional points for AP and honors classes, was a 4.38 on a 4 point scale. His unweighted GPA was a 3.87 on the same 4 point scale. Each of the traditional students is described in detail in the following section.

Anita. Anita was an 18-year-old, female, traditional AP student. She had successfully completed two AP courses in the track for AP Macroeconomics. She also completed two honors level courses in the track with scores well above 90%. Her unweighted grade point average (GPA) was a 3.62 on a 4 point scale, with extremely rigorous courses. Her weighted GPA was a 4.31 on the same 4 point scale. Anita was under a great deal of pressure at home to be

academically successful. Both her parents were highly educated and highly successful

financially. Her father owned an accounting firm in the local area, and her mother was a nurse.

During conversations with the researcher, Anita shared that she was always concerned about

disappointing her parents with her grades. She felt incredible stress to go to either medical school

or law school, neither of which she was extremely excited about. Because of the pressure put

upon her at home, Anita always seemed like she was on the verge of crying if she didn't

understand something the first time. She struggled with some of the more advanced concepts in

the course, and it visibly caused her to have an emotional response. More than once during the

course, she left the room in tears due to challenging content. Anita would spend most of her

lunch periods in my class. Sometimes we would work on economics topics, but most times she

would just use me as a sounding board. She would talk about the pressures she felt, and the stress

that it caused her. She worried that she wouldn't be accepted into the university that she wanted,

or that her parents wanted for her. In the end, Anita applied to the a few major universities in the

Southeast. She was accepted at, and chose to attend a large university in Georgia that is classified

as RU/VH by Carnegie. RU/VH is the top level research university that engages in very high

levels of research activity (Carnegie Foundation).

  Ava. Seventeen-year-old Ava was an extremely high performing traditional AP student.

She had completed only honors or AP level courses with an unweighted GPA of 3.95, and a

weighted GPA of 4.22. She successfully completed all honors and AP level courses that would

track her to AP Macroeconomics. All her previous grades were above 91%. Every academic

course attempted had been at the 90% or better level in honors or AP courses. Ava was also

serviced by an IEP, but not for academic issues. Ava's IEP is to address her social issues. She

has emotional behavioral disorder (EBD), and has issues with other girls. Socially, she struggles

in the class due to her emotional issues. Ava sits at a table by herself most days. Occasionally she will join a group, but has a difficult time dealing with the other girls. She has very little tolerance for immaturity or a lack of focus, and gets visibly upset when she feels the group isn't focused on the task at hand. She spoke with me on multiple occasions about preferring to work alone and not enjoying group work. Although the course was designed for group work, Ava was still able to be successful due to her interactions with me. Ava's older sister is attending a local mid-level university, but Ava's aspirations are higher. She applied to, and was accepted at multiple top-level universities in the Southeast. She eventually chose to attend a private university in the Southeast. This university is an RU/VH as classified by the Carnegie Foundation (2014).

     Tim. Tim was an 18 year old male traditional AP student. Tim attempted seven AP courses during his academic career. He successfully completed them at a 90% or better average. He also completed multiple honors level courses with averages in the high 90 percent range. Tim is the quintessential AP student. His unweighted GPA was a 3.75, and weighted was a 4.16. He is extremely self-motivated and organized. Tim constantly asked probing questions to further his understanding of even the minutest macroeconomic concepts. When working in groups, Tim was always the leader of his group and the other students often deferred to him on the answers. Most of the time, Tim would choose to work with the students who were struggling with the concepts. During my observations of the class I perceived that Tim self-grouped in that way so that he could be the one to explain the material to his peers. He would explain it in multiple ways, which I believed helped him to comprehend the material better. Tim did not have a job outside of school. According to him, his parents felt that school was his job right now and he didn't need another one. Tim was a member of the tennis team and was in a few academic clubs, so he did have some extra-curricular activities but they were all completed before 8 p.m. Tim applied to

many of the major universities in the Southeast and was accepted at every school he applied to.

He decided to attend a major state university in Florida. This university is categorized as an

RU/VH by Carnegie (2014).

      Roger. Eighteen-year-old Roger is the eighth traditional AP student. Roger was the only

student is this case that the researcher had previously taught. The researcher was Roger's AP

World History teacher when he was in the 10th grade. Roger has an impressive academic record.

He has taken ten AP courses in his academic career. He has successfully completed each of these

with a minimum score of 90%. His overall GPA was a 3.9 on a 4 point scale. Roger is a

prototypical AP student. From the first time I met Roger, two years prior in his sophomore year;

he has always had his path planned out. Even as a sophomore Roger knew exactly what classes

he needed, and what clubs to be a member of to get him where he wanted to be. Roger also took

the time to research universities at an early age in order to familiarize himself with their

requirements. Although he did not finish at the top of his class, he was in the top 1% at the time

of graduation. Roger and I had a history which made for an easy transition. The other course that

I taught Roger in is not a fully blended course, so there was some hesitance on Roger's part but

that quickly subsided. Roger applied to a select few major universities and was accepted by all of

them. He chose to attend a highly respected university in North Carolina.

Course Description

      The AP Macroeconomics class is taught using a blended learning method (Graham;

Picciano & Seaman). Within the blended learning spectrum, the AP class would be most closely

aligned with the Flipped Classroom model (Bergmann & Sams; Christensen, et al.). I used this

model to provide students with materials for review and for assessment. I do not, however, use

this model for the sole delivery of content. Content was delivered online, but there is also content

delivery within the confines of the classroom environment. Students spend time online watching

videos designed to deliver pertinent content throughout the course. All students take their

formative and summative assessments for the course online. These assessments are designed for

content mastery. Students complete formative assessments such that they may take the

assessments as often as they like until they receive a score with which they are comfortable.

Summative assessments work in a similar way. Figure 4 is a screenshot of Tim's attempts at the

Unit 1 quiz. Tim attempted this quiz thirteen times, although he had reached a mastery score of

70% on his first attempt, he continued to take the quiz until he scored a 100%.

Finished	15 January 2014 9:52 PM	15 January 2014 10:12 PM	20 mins 3 secs	70
Finished	15 January 2014 10:13 PM	15 January 2014 10:27 PM	13 mins 31 secs	80
Finished	15 January 2014 10:27 PM	15 January 2014 10:41 PM	13 mins 48 secs	90
Finished	21 January 2014 4:56 PM	21 January 2014 5:05 PM	8 mins 28 secs	80
Finished	21 January 2014 5:08 PM	21 January 2014 5:14 PM	5 mins 45 secs	85
Finished	21 January 2014 5:23 PM	21 January 2014 5:28 PM	4 mins 42 secs	95
Finished	21 January 2014 5:30 PM	21 January 2014 5:39 PM	9 mins 19 secs	95
Finished	21 January 2014 5:42 PM	21 January 2014 5:49 PM	7 mins 25 secs	95
Finished	21 January 2014 5:50 PM	21 January 2014 5:58 PM	8 mins 43 secs	90
Finished	21 January 2014 6:00 PM	21 January 2014 6:03 PM	3 mins 4 secs	95
Finished	21 January 2014 6:03 PM	21 January 2014 6:08 PM	5 mins 11 secs	95
Finished	21 January 2014 6:09 PM	21 January 2014 6:11 PM	2 mins 4 secs	95
Finished	21 January 2014 6:20 PM	21 January 2014 6:22 PM	2 mins 18 secs	100

Figure 4 Formative Assessment Score Report

Summative assessments are taken once, if the student passes the assessment, then he or

she is finished. If a student fails the exam, he or she is taken to a remediation lesson that her or

she must complete before retaking the exam. If a student passes the exam the second time, they

receive a score of 70%. If the student fails again, he or she is taken to a more involved

remediation lesson. Students continue this loop until they pass the exam, and a score of 70% is

recorded. Figure 5 shows an example of the summative assessment loop that the students use to

reach mastery.

Quizzes and Tests

Unit 1 Quiz

Supply and Demand Quiz

Review Videos (Watch before the exam)

Unit 1 Exam

Unit 1 Exam (Extended time)

Review Video 1 (Remediation)
Restricted: Not available unless you get a particular score in **Unit 1 Exam**.

Review Video 2 (REMEDIATION)
Restricted: Not available until the activity **Review Video 1 (Remediation)** is marked complete.

Unit 1 Exam (RETAKE)
Restricted: Not available until the activity **Review Video 2 (REMEDIATION)** is marked complete.

Figure 5 Summative Assessments with Remediation

Students also completed the Economics Literacy Project (ELP) as part of the course. The

ELP is designed to foster online dialogue between students. Students find articles, and complete

an economic analysis of the article. The analysis is then posted in a forum online where peers

respond to the analysis and offer suggestions to further develop understanding. The researcher

also commented on student posts to scaffold good feedback procedure. As illustrated in Figure 6,

students were able to interact with each other well after the school day had concluded. Two of

the posts come well after 11:00 p.m. on a week night.

Figure 6 Economics Literacy Project

Researcher's Role and Positionality

In a qualitative case study, the researcher functions as the primary instrument of data

collection and analysis. Given this fact, background information about the researcher is pertinent

to the credibility of the design (Merriam, 2009). According to Gagnon (2010), the researcher's

personal characteristics can have a significant impact on the study results. Marshall and Rossman

(2011) discuss the need for all researchers to demonstrate that their positionality will not bias the

study in any way. Because a case study researcher must understand the issue before engaging in

the research, he or she is especially prone to advocating for a particular issue (Yin, 2009).

Although it is impossible to eliminate the researcher's preconceived theories, beliefs, and

perceptual lens, it is imperative that the researcher avoid the negative consequences of these

(Maxwell, 2013). Based on studies, it is recommended that the researcher establish his position

within the phenomenon being studied (Creswell, 2013; Gagnon, 2010; Lichtman, 2014;

Maxwell, 2013).

In this study, I was also the classroom teacher and, as such, took on a participant-observer

role (Creswell, 2014; Gagnon, 2010; Yin, 2009). As a participant-observer, I assumed various roles within the study. I functioned as the researcher, the classroom teacher, and also as the department chair. As the researcher, my focus was on the implementation of the study design, the collection of data, the analysis of that data, and on my findings. As the classroom teacher, my focus was on the students and their needs in the course. As the department chair, I was acutely aware of the impact that my scores have within the school and the district. Although this role provided me with unusual opportunities to understand the phenomenon being studied, it also presented the issue of me becoming more focused on the participant role (Gagnon, 2010; Yin, 2009). In this study I do, however, have a thorough understanding of the internal workings of the school due to my role as the classroom teacher for the course being studied (Gagnon, 2010). As a participant-observer, I was able to understand the setting as an insider, while describing it to and for the understanding of outsiders (Patton, 2001). I appreciated the implementation of a blended learning curriculum to an extent that would not be entirely possible through just interviews (Patton, 2001; Yin, 2009). As an active participant in the phenomenon, I became immersed in the data; which enabled me to have greater insight and understanding in the analysis of the data (Yin, 2009).

As the teacher of Advanced Placement Macroeconomics at the school being studied, it is my opinion that students in a blended Advanced Placement course will feel more successful. I experienced instances in a pilot study where non-traditional Advanced Placement students felt they were more successful. As such, my previous experiences and biases were considered as the research design was created to avoid issues with reliability and validity. From my personal experiences teaching this course in a blended method, I have witnessed how students gravitate towards the blended method. In an unpublished pilot study, my findings suggested that students

felt that there was a difference in their performance in a blended course. I believe that blended learning does have an impact on student performance. I have also spoken at conferences on the topic of blended learning and its impact on student learning. As such, I have a bias toward blended learning. The following strategies were implemented to reduce the impact of my bias: triangulation of data and methods, member checks, peer review, and researcher reflexivity (Lincoln & Guba, 1985; Merriam, 2009). Throughout the course of this study, I kept a journal in which I wrote memos to myself and also observations of student interactions. These journal entries involved aspects which were relevant to my study and interesting in my data. I made it a point to write in my journal at the end of each day on the various aspects relating to my study. This journal assisted me in keeping my thoughts in context, and not losing any of the relevant interactions within my classroom.

Data Collection Procedures

According to Glense (2011), qualitative researchers play an active role in producing the data through the types of questions they ask. The use of multiple data sources is important in ensuring an accurate representation of the phenomenon (Gagnon, 2010; Lichtman, 2014). With that in mind, the data for this study included interviews, documents, observations, and online data. Due to its asynchronous nature, blended learning is very difficult to observe. This inability to directly observe participants while they are interacting with the course materials outside of the classroom necessitated the need for interviews (Creswell, 2014). An interview protocol (Appendix 1) was developed that documented the date, time, and location of each interview (Creswell, 2014; Gagnon, 2010; Merriam, 2009; Yin, 2009).

Student Interviews

The interview protocol consisted of both structured and semi-structured questions. Participants were first interviewed at the half way point of the semester, and then follow up interviews were conducted during the last month of the semester. Structured questions are those where the wording and order are predetermined by the researcher. Structured interview questions are used primarily to gather socio-demographic data. Semi-structured interview questions assume that participants experience the phenomenon being studied in unique ways. This type of questioning allowed the researcher the freedom to respond to the emerging views of the respondent (Merriam, 2009). The questions were guided semi-structured, with the researcher asking probing or follow-up questions. Although the interview protocol had some demographic questions that were structured, the majority of the questions were conversational in format (Creswell, 2014). The questions were framed in a way to best elicit an in-depth response from the participants (Merriam, 2009; Yin, 2009). Questions focused on the participants' perceptions of the blended learning experience. Questions such as, "What do you like most/least about blended learning classes?" or "Tell me about some of the ways your teachers use blended learning in the classroom?" were designed to evaluate participants' experiences in a blended course. To evaluate the participants' perceptions in the course, questions such as "In your experience, how does your use of time in this course compare with other courses?" or "What is your impression of your overall success in this course?" were asked. To assess the participants' views on communication, questions such as "How does your teacher incorporate social media as part of the course?" or "From your perspective, how has the communication with your teacher been in this class compared to other classes?" were asked. Follow-up questions probed further, based upon the participants' responses.

For this study, all interviews were recorded using Windows 8 Audio Recorder®. A secondary recording of all interviews was created using the Rev Android Application®. Interview recordings were then sent to Rev® for transcription. Each interview transcription was submitted to the interviewee for accuracy.

Documents

Demographic documents. Additional documents related to the participants academic background and performance were also collected at the beginning of the study. From the school information system (SIS), I accessed the participants' academic transcripts (Appendix 4). I used the data from the transcripts to determine whether or not the participants were traditional or non-traditional AP students.

Academic documents. Also collected from the SIS were student grades during the study. The grades were used to track student performance throughout the study and measure academic performance. At the end of the study, standardized test data were collected. This data came from the state EOCT which included both individual performance and class performance data. Additional standardized test data were acquired from the College Board® which included the participants' performance on the AP exam (Appendix 5), and the overall class performance on the AP exam (Appendix 6).

Online documents. The online data were collected from a Usage Report that is generated by the schools Learning Management System (LMS). The Usage Report tracks the amount of time that the user is logged into the LMS; it also tracks the amount of time a specific user is interacting with a particular course component. Other online data were also collected in this study using Google Analytics®. Google Analytics® tracked users' site visits, time per page, internet connection data, type of system used, and type of access. The report also tracked how

students were interacting with the instructional materials, specifically operating system and mobile technology (Lichtman, 2014). Google Analytics® also provides information about what internet provider the participants were using to access class materials. By knowing the participants internet provider, the researcher was able to evaluate where the participants were most actively engaged with the course material. This data also allowed the researcher to determine at what time the participants were engaging with the course materials. This data helped the researcher develop insight into the participants' interaction with the course, and also aided in the development of follow up interview questions.

Observations

In-class observations. Throughout the course of the study, I kept a research journal to help me develop my thoughts. Within the pages of this journal I reflected upon what I witnessed during my in class time with the participants. These reflections also became a way for me to begin to analyze my thought process (Glense, 2011; Maxwell, 2013). Piantanida (Piantanida & Garman, 2009) describes three types of reflection. The first type of reflection Piantainida (2009) addresses is recollective reflection. This type of reflection gives an immediate account of the experience. Recollective data were collected on a regular basis throughout the study. Throughout the course of the study, I would write memos describing specific events that happened within my class on that day. These memos included my observations of participant interactions with their peers, as well as with me. The second type of reflection that Piantanida (2009) identified is an introspective reflection. This type of reflection is where the researcher looks within. This type of reflection was not a part of my reflective journal. The third type of reflection that Piantanida (2009) identifies is a conceptual reflection. Piantanida (2009) describes the idea of conceptual reflection as one where, "…interpretive researchers are resonating simultaneously with the

specific experiences of the study, with existing discourses, and with the phenomenon under study" (p.63). Within my own journal, I regularly noted how observed actions in my class related to the theoretical framework used in my study. As the study developed, my notes helped me to coalesce the nascent insights and ideas as they formed.

Online observations. Observation of students online interactions were conducted in a similar manner. Although the nature of online communication is asynchronous, I would record my thoughts about the discussion posts or interactions within my reflective journal. Data from student blogs and Google Voice$_®$ transcripts were collected. The blogs were specifically from the ELP described earlier in this chapter. These interactions revealed how the participants were developing understanding of macroeconomic concepts. The Google Voice$_®$ text transcripts highlight the types of questions students were asking me, as well as what time they were able to interact with me outside of the classroom.

Data Analysis Procedures

Interview Analysis

Because of the large amounts of data generated by qualitative research, it is also highly recommended that analysis of that data be ongoing (Creswell, 2014; Lichtman, 2014; Maxwell, 2013; Miles & Huberman, 1994). As a tool to facilitate ongoing data analysis, this study used a summary form (Miles & Huberman, 1994). As part of this form, the first cycle of coding took place (Saldana, 2013).

Figure 7 Contact Summary Form

After each interview, I completed a Contact Summary Form where I jotted down my thoughts about the interview. I also wrote down the reoccurring topics that each participant discussed during their interview. In Figure 7, Anita continually addressed caring and supportive in her interview. These initial interview notes eventually developed into the codes used in the next phase of codification.

Codification is the process whereby the researcher identifies data that might be useful for the purpose of the research (Merriam). Both In Vivo and Initial (Open) Coding were used in the first cycle of coding (Merriam, 2009; Saldana, 2013). In Vivo uses the direct language of the participants to create the codes, not preconceived researcher-generated codes (Saldana, 2013). Open coding was performed on transcripts using a line-by-line process (Saldana, 2013). An example of the initial code set can be found in Figure 8.

```
Code-Filter: All
_____

HU:        Dissertation
File:      [C:\Users\Daniel\Documents\Scientific Software\ATLASti\TextBank\Dissertation.hpr7]
Edited by:  Super
Date/Time:  2014-09-23 20:08:26
_____

ability to differentiate instruction
Accessability
Amount of Blended Courses Taken
Blended Assessments
Blended Learning Compared to Traditional
Blended Learning Definition
blended learning more enjoyable
Blended Teacher Student Interaction
blending a class is more effort for the teacher
blending is more effort
Caring Teacher
Challenges for Students
Classroom Environment
Communication and collaboration
created content causes disconnect
Lack of Technology usage
least beneficial
Mastery Learning
Non-Blended Teacher Attitutes
Old Technology Issues
Online Materials
organization in blended learning
Ownership of Learning
parent attitudes towards blended learning
parental involvement
Perception of Learning in a Traditional Course
Preparing for Future
Problems with Technology
Reason not to blend
Repetition Of Materials
some subjects difficult to blend
Student Perception of Success
Student Preferences
Student Understanding
Subjects that blend most often
Teacher ability to modify instruction
teachers don't follow through with blending
Technological Impact on Learning
technology issues a problem
```

Figure 8 Initial Code Set

After the first cycle of coding, code mapping was performed. Code mapping is the

process of condensing the initial codes into a selected list of categories, and then into the central

themes of the study (Saldana, 2013). Figure 9 is an example of the analysis performed on Anita's

first interview. Each quote was organized such that relevant codes could be determined.
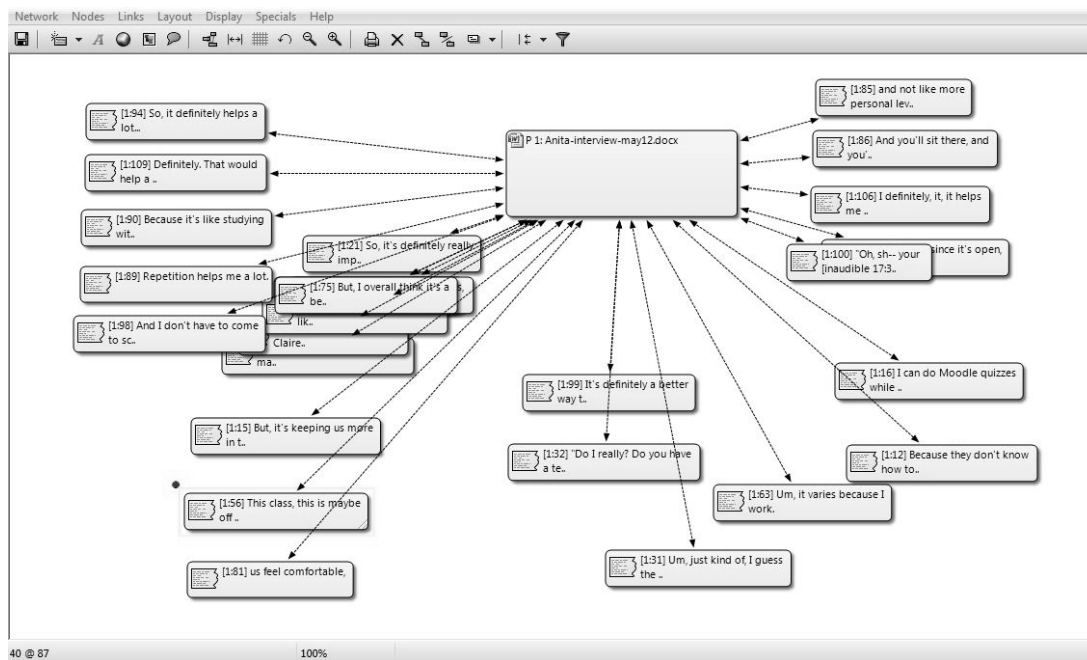
Figure 9 Anita's network view

Finally, axial coding was completed on the data. Axial coding is designed to find the codes that are dominant and remove redundant codes (Merriam, 2009; Saldana, 2013). These emergent categories were further analyzed in order to discern the emergent themes (Merriam, 2009; Miles & Huberman, 1994; Saldana, 2013). Figure 10 highlights one of these emergent categories, and shows the codes that make up the code family Content Delivery.
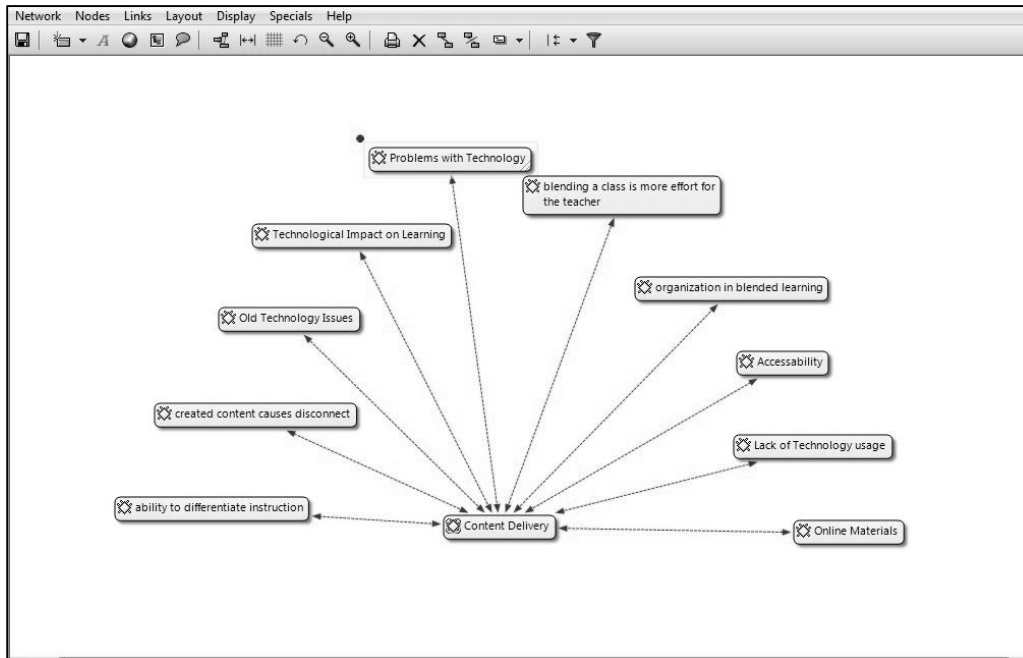
Figure 10 Content Delivery Code Family

In order to facilitate the management and analysis of such a large amount of data I used Atlas.ti®. All data were imported into Atlas.ti® as primary documents. This program is designed specifically to support the qualitative researcher (Friese, 2012). Atlas.it® provided me with a platform to track my notes, annotate quotes for analysis purposes and create codes based upon that analysis. Additionally, Atlas.ti® provided me with an analytical and visualization tool to interpret the data collected.

Document Analysis

In addition to the interview transcripts, Google Voice® transcripts were also coded. Coding of these transcripts was two-fold. First, emergent categories were discerned in the same manner as the interview transcripts. However, an additional coding structure was necessary to evaluate time. To accomplish this, Google Voice® transcripts were categorized as; Early Morning (before 8:30 a.m.); Morning (8:30 a.m. to 12:00 p.m.); Afternoon (12:00 p.m. to 5:00 p.m.); Evening (5:00 p.m. to 10:00 p.m.); and Late Evening 10:00 p.m. to 12:00 a.m.).

Student assessment data were collected using pre-installed reports from the LMS. These

reports show how many times a student attempted a particular assessment, how long each

assessment took the student to complete, and what time the student took the assessment. A report

was generated after each formative and summative assessment. These reports were then edited to

remove all non-participating students. Participant names were also changed to their study

pseudonyms. Forum posts were also evaluated and analyzed for content and time. Again, these

reports were edited to remove all non-participating students and participant names were changed

to their study pseudonyms. These reports were also categorized using the same time codes as the

Google Voice® transcripts. The final LMS data were generated by a report created by the

researcher (Figure 11). This report sums all the time that the user is logged into the system and

converts it to hours and minutes. The report tracks individual logins, as well as how often the

students access any content or assessment activities. It keeps a running time summation for each

student and reports the total time. This report was run at the completion of the semester to

maximize data collection.

Student ID	User Name	First Name	Last Name	Course Dedication Time	Activity Views	Logins
				2 days 21 hours	1034	85
				9 hours 36 mins	162	9
				16 hours 15 mins	0	0
				7 hours 23 mins	61	12
				3 hours 47 mins	147	13
				3 hours 11 mins	89	14
				8 hours 44 mins	151	21
				16 hours 58 mins	0	0
				11 hours 18 mins	0	0
				7 hours 32 mins	144	20
				10 hours 42 mins	164	25
				3 hours 26 mins	128	26
				7 hours 11 mins	0	0
				9 hours 21 mins	364	43
				13 hours 46 mins	0	0
				1 day 3 hours	0	0
				20 hours 31 mins	0	0
				23 hours 23 mins	0	0

Figure 11 LMS Usage Report

Data reports were also collected from Google Analytics®. At the end of the study the following reports were generated; browser & operating system (OS); network; mobile overview; and devices. The browser and OS report provides total and percentage data for each browser used to access the LMS and the OS used by the participant computer. The network report provides total and percentage data for each internet provider used to access the LMS. The mobile overview report provides total and percentage data for each device. In this report both desktop and laptop computers are categorized at desktop. The mobile devices report provides total and percentage data for each mobile device (tablet/phone) used to access the LMS.

Data Management Plan

Having an effective management plan is necessary for the facilitation of a coherent study (Merriam, 2009; Miles & Huberman, 1994). The researcher needs to have a plan to organize, analyze, and store project data. This plan must also include a process of working with the data throughout the life of the study (Marshall & Rossman, 2011). One of the benefits of qualitative research is that it creates "fat data" (Glense, 2011, p. 192). Having a well thought out data management plan is important due to the abundance of data. For this study, all interviews were recorded using Windows 8 Audio Recorder®. A secondary recording of all interviews was created using the Rev Android Application®. This provided redundancy and also safeguarded against lost data files thus increasing internal validity. The audio recordings were stored on my laptop, an external hard drive that is kept in a locked storage area nightly, and also in the cloud at Box.com®. Box.com is a cloud storage provider. Box.com® allows for password protected files, and provides high-grade encryption of files (Box, 2013). All files stored at Box.com were password protected. In order to ensure confidentiality each participant was assigned a pseudonym as part of the study. All research files referenced that pseudonym. Files were stored with a standardized naming system. Files were named in this fashion throughout the duration of the study, *pseudonym-data type-date*.filetype (.mp3, .docx, etc.).

Audio files were then sent to a professional transcription service for verbatim transcription. The researcher employed Rev® as the transcription service. In order to validate the accuracy of the transcriptions, they will be evaluated by me and the participants. Usage Reports and grade information were exported to Microsoft Excel® to manage and sort the data for ease of use. Advanced Placement exam score reports were run for each participant in the study. This report was available in the summer. All data were imported into Atlas.ti® for single source

management and codification of the data.

Trustworthiness

The central factor of research is the need to be valid and reliable. Validity is the measure of how well the findings match reality (Creswell & Miller, 2000; Gagnon, 2010; Merriam, 2009; Yin, 2009). It is impossible for the researcher to define that reality, but the researcher can come closer to reality through the closeness of participants and researcher (Creswell, 2014; Glense, 2011; Lichtman, 2014). Internal validity refers to the inferences about causal relationships (Shadish, Cook, & Campbell, 2002). To help ensure the validity of data collected, transcripts were shared with the participants and member checks were completed (Creswell, 2013; Merriam, 2009; Yin, 2009). Triangulation is the most well known strategy for enhancing internal validity (Merriam, 2009). Member checking is the process whereby the researcher brings the transcripts and findings back to the participants for review (Creswell & Miller, 2000). Lincoln and Guba (1985) proposed four criteria that they believe must be considered in the pursuit of a trustworthy study (Shenton, 2004). These criteria are:

a) Credibility (in preference to internal validity);
b) Transferability (in preference to external validity);
c) Dependability (in preference to reliability);
d) Confirmability (in preference to objectivity).

For the purposes of this study, Lincoln and Guba's (1985) terminology was used.

Credibility

To insure credibility and to ensure that the study measures utilized in this study measured what is actually intended, eight separate provisions were incorporated into the study design. These provisions were: the adoption of well established research methods; familiarity with the culture; triangulation; ensuring honesty of participants; frequent debriefing with my committee;

peer scrutiny; and member checks.

Established research methods. Yin (2009) describes the need to incorporate the correct operational measures for the proper study of the phenomenon in question. My choice of a case study met this operational need. My study was designed and implemented to ascertain student perceptions and experiences. A case study design was the correct operational measure to evaluate this type of phenomenon.

Familiarity with the culture. As the classroom teacher for the AP Macroeconomics course being studied, I was intimately familiar with the culture of the class. I have been teaching at Berlin High for ten years, and I have held many teacher leadership roles during that time frame. As the department chair, I am familiar with the requirements of both the End of Course (EOC) and AP exams. I also understand the importance that these scores have to both the school and district level administrators. Lincoln and Guba (1985) recommend prolonged engagement between the investigator and the participants. The participants in this course all knew me prior to enrollment in my AP Macroeconomics course. We also spent an entire semester becoming more familiar with each other within the framework of this course.

Triangulation. Merriam (2009) has described triangulation as a way to enhance internal validity within a study. This study used multiple sources of data and multiple methods of data collection to achieve triangulation (Denzin, 2009; Gagnon, 2010; Merriam, 2009; Yin, 2009). Triangulation was further enhanced through using multiple theoretical perspectives to examine and interpret the data (Lincoln & Guba). Data were examined through the theoretical perspectives provided by Carroll (1963) and Georgouli (2008).

The process of triangulation evaluates multiple points of data to converge on a concept and gain understanding from it (Marshall & Rossman, 2011; Merriam, 2009; Miles & Huberman,

1994). In this study, multiple methods of data were collected in the form of participant interviews, observations, online usage data, communication data, participant transcripts, class grades and final scores on the Advanced Placement exam and EOC exams. Multiple sources of data were collected throughout the study (Merriam, 2009). Participants were interviewed at the midpoint of the course and then again at the end of the study. Grades were collected at the end of each unit of study. I kept a research journal throughout, and documented my observations multiple times a week. In addition, collection of online data were ongoing throughout the duration of the study. Data were also examined through multiple theoretical framework throughout the study.

Ensuring honesty from interviewees. At the beginning of each interview, participants were reminded that there would be neither academic benefit nor penalty for participating in the study. Participants were also assured that anything they said was allowed, and that no consequences would result from their responses even if the feedback was negative. Participants were informed that they had the opportunity to refuse to answer any question. They were also informed of their ability to discontinue their participation in the study at any time (Shenton, 2004).

Frequent debriefing with committee. Throughout the course of this study, I was in constant contact with members of my dissertation committee. They provided me with feedback on study design, methodology, data analysis, and helped to focus my direction. This contact provided me the opportunity to discuss alternative approaches and to solidify my study choices (Shenton, 2004).

Peer scrutiny. Also throughout the course of this study, I shared my ideas and findings with colleagues and cohort peers. They provided me with a fresh perspective on my research that

I was unable to see for myself. My own proximity to the study frequently inhibited my creativity. It was from my peers that I was able to step back and gain a fresh perspective on my study (Lincoln & Guba, 1985).

  Reflective commentary. During the course of this study, I kept a reflective journal (Shenton, 2004). Within the pages of this journal I noted classroom observations, theory ideas, questions for follow-up, and my own struggles with the study. This journal proved to be an invaluable source for understanding the emerging patterns within my study.

  Member checks. After each interview was transcribed, participants were asked to verify the authenticity of the data (Lincoln & Guba, 1985). Lincoln and Guba (1985) consider member checks to be the single most important factor in increasing credibility. Participants were also asked to provide feedback on the emergent themes that I was developing (Miles & Huberman, 1994). Throughout this process, the participants aided me in crystallizing my thought process and provided me with further clarity of their thoughts. This process provided me with increased understanding of their experiences beyond that of just their interviews.

Transferability

  External validity examines how the findings of one study may be applied to other situations (Gagnon, 2010; Merriam, 2009; Shadish, et al., 2002). Qualitative research, however, is used precisely because the researcher wishes to understand some phenomenon in depth (Lichtman, 2014; Maxwell, 2013; Merriam, 2009). As a way of enhancing the external validity of the study, a thick, rich description of the case and findings was provided.

Dependability

  Lincoln and Guba (1985), stress that there are close ties between credibility and dependability. They argue that a demonstration of credibility helps to establish dependability.

My study included a section that described the research design and its implementation. It

provided operational details of the data gathering, and also provided a reflective appraisal of the

process (Shenton, 2004). My study was also examined by peers and my committee who were not

part of the research process (Lincoln & Guba, 1985). Although this is not exactly what Lincoln

& Guba (1985) describe when discussing an external audit, it does meet many of the criteria

mentioned. These two groups provided me an opportunity to summarize my preliminary

findings, assess the adequacy of my data and my preliminary results, and provided me with the

feedback necessary to move my study forward.

Confirmability

Miles and Hubermen (1994) consider a key piece of confirmability to be the

acknowledgement by the researcher of his own predispositions. Throughout my study, I have

addressed and acknowledged my own biases and predispositions. I have provided the steps and

framework utilized to minimize these as well (Merriam, 2009). Lincoln & Guba (1985) consider

a detailed methodological description to be equally important. To that end, they recommend an

audit trail which allows observers the ability to trace the course of the research.

A physical audit trail documents the stages of this study and reflects the key research

decisions that I made during this process. The physical audit trail for this study is as follows:

- **Identification of the research problem:** In December of 2012, I completed a

  pilot study pertaining to the perceptions of students in a blended course. This

  study was then forwarded to potential dissertation committee members to help

  identify the viability of expanding this topic for an Ed.D study. Extensive

  evaluation of the existing literature and discussions with committee members

  provided me the guidance to fine tune my research topic to explore the

experiences of traditional and non-traditional AP students in a blended learning course.

- **Research proposal:** Based upon the research problem identified, I developed and submitted my research proposal to my committee in November of 2013. This proposal included a statement of the problem, a literature review, and methodology sections. The proposal was defended and accepted on December 13th of 2013.

- **Literature review:** An in-depth review of blended learning, instructional time, and Advanced Placement expansion literature was undertaken throughout this process. New literature was evaluated throughout the process and included in the study as necessary. Multiple drafts of the literature review were submitted to my committee for evaluation and feedback during the writing process. The first draft of the literature review was evaluated by committee members in December of 2013. Follow-up evaluations were conducted in April, July, September, and October of 2014.

- **Framework design:** In order to properly examine the phenomenon of student experiences, a case study design was selected. The design and methodology of the study was evaluated, and approved, by committee members in December of 2013. Subsequent conversations with my committee members provided me with the insight necessary to evaluate the data types that would be necessary to investigate student experiences. The methodology was originally reviewed in December of 2013, with subsequent reviews and modifications completed in April, September, and October of 2014.

- **Interview schedule:** Participant interviews were an integral part of this case study. Based upon the topics identified in the literature and from the research problem, an interview schedule was created. The interview questions were reviewed by the committee and approved for use in December of 2013. Initial interviews with participants were conducted in February of 2014. Eight participants were interviewed for approximately forty-five minutes each. Follow-up interviews were conducted in May of 2014 with each of the participants.

- **Data collection:** A total of sixteen interviews were conducted with the eight participants. These interviews were recorded and transcribed, and the transcriptions member checked by the participants. Data were also collected in the form of formative and summative assessment scores, LMS usage, academic transcripts, AP scores, EOCT scores, communication logs, and blog transcripts.

- **Data analysis:** Data were coded and analyzed using Atlas.ti®. Data were analyzed on a continuing basis throughout the course of the study. Data analysis was evaluated in August and September of 2014 by my committee members. Their feedback provided me the clarity of thought to conceptualize my concepts and themes.

- **Creation of new theory.** Through reflection on the findings generated by this study and from discussions with my committee a new theory of blended learning was conceptualized in October of 2014. This new theory incorporated previous theories on blended learning and instructional time with the addition of the student into the model. This new theory added to the body of blended learning theoretical knowledge.

Ethical Considerations

Lichtman (2014) delineates eleven principles of ethical conduct that help to inform this study. The first principal is to *Do No Harm.* This study involved the participation of a vulnerable population; participants were all under the age of 19 at the time of the study. There were also two special education participants in the study. All safeguards were taken to ensure that no harm befell any of the participants. In particular, the two special education participants were able to have their advocates present at all interviews. *Confidentiality* was addressed by assigning participants pseudonyms, as was the school itself, to protect their confidentiality. Student data taken from school records was identified by the pseudonym and a random number assigned to each participant. The final principal that this study needed to address is that of *Informed Consent.* Participants were informed that their participation was completely voluntary and that they could discontinue participation at any time (see Appendix 2 – Parental Consent Form). All participants completed an assent form (see Appendix 3 - Student Assent Form), as well as a parental consent form (Creswell, 2014). All study related materials, such as transcripts, audio recordings, school and class data, were kept in a locked cabinet at my place of residence for a period of one year from the completion of this study. After one year has passed, all data were destroyed. All data stored on Box.com had the proper request filed to have data permanently deleted from the servers (Box, 2013).

Limitations and Delimitations

As a way of demonstrating the trustworthiness of the study, it is necessary to realize its limitations (Glense, 2011). A limitation of the study is the ability to generalize the potential findings to other settings (Yin, 2009). The participants of this study were all Advanced Placement students, and as such represented only a small portion of the student body. Another

limitation is the choice of AP Macroeconomics as the course of analysis. It is apparent that differences exist in the experiences and perceptions of students in different Advanced Placement courses.

Conclusion

This chapter outlined the process by which the current study was completed. It provided the research questions used for this study. The background setting and description of the course was also articulated in this chapter. The researcher's role and positionality were addressed, and literature on participant researcher was presented. Data collection, analysis, and management issues were reported, as were issues related to validity and ethical considerations. The following chapter reports on the analysis of the data and puts forward the finding of this study.

CHAPTER 4

ANALYSIS OF DATA AND FINDINGS

Introduction

This chapter reports the findings from the research study outlined in Chapter 3. This chapter aims to address each of the four research questions. Using information gleaned from interviews, online discussions, and student-teacher communication, online reports, and other documents this chapter aims to generate themes. Each theme is presented, and the relevant research questions are addressed, along with applicable triangulation data. These underlying themes are then developed further, using the information provided by the students, themselves, to give voice to them.

From analysis of the data, five major categories emerged. Three of these categories mirrored the model developed by Georgouli et al (Georgouli, et al., 2008), while the other two categories addressed variables from the Carroll Model of School Learning (Carroll, 1963). Content, communication, and assessments were categories that participants focused on as important aspects of their blended learning experience. Time usage also emerged as an area that seemed to enhance the participants' experience with the course. Student attitudes, which represented the participants' connection to the course, impacted the participants' views of their performance. These categories were analyzed further to find the emergent themes from the research. Three themes emerged from the evaluation and analysis of the major categories: Learning Whenever or Wherever, Mastery and Understanding, and Changing the Student-Teacher Dynamic.

Learning Whenever or Wherever

Extension of the classroom experience was an important theme that emerged from the research. In a blended course, the participants were able to engage with me, the material, and each other in meaningful and productive ways when they most needed to. This theme was important for both groups of AP students. The findings reflect that the flexibility of the course, as well as the ability to interact with me were important factors that impacted the participants success. The findings also show that the design of the course allowed the participants to better manage their schedules. Communication between me and the participants was found to have helped them throughout the course. By being able to contact me directly through Google Voice®️ and email it was found that participants were able to extend their classroom experience. Research questions one and three fell under this theme and are addressed in the following sections.

Flexibility

Throughout the interview process, participants commented on how the blended model provided them the ability to better manage their time. However, I found there was one area of distinction between traditional and non-traditional students as to why they needed to manage their time. For the traditional AP students, it was the demands of their overall academic course load that necessitated the need for more time. Tim noted "I definitely don't have as much time, because I wind up doing all kinds of other stuff, like college stuff." Anita, who was in multiple, clubs at school, said, "It gives me time to plan my tomorrow, or like the next day for me." Other comments from traditional students include, "I mean if I'm, like say I'm really busy one day, I can still make time, go in there and do it real quick, but rather than sitting down and just working out of a book for two hours." Anita found it extremely helpful to have the flexibility of a blended course, "So it helped me just because as students we also have other stuff going on." She even

mentioned a specific incident, "I can do Moodle quizzes while I'm at the store. It's definitely good to have the flexibility." The ability to access the material whenever and wherever needed is reinforced in reports from Google Analytics, the LMS was accessed 20% of the time via mobile devices and the large percentage of these were phones.

Mobile Device Info ?		Acquisition		
		Sessions ? ↓	% New Sessions ?	New Users ?
		3,323 % of Total: 20.70% (16,052)	32.77% Site Avg: 34.27% (−4.37%)	1,089 % of Total: 19.80% (5,501)
1.	Apple iPhone	1,964 (59.10%)	33.91%	666 (61.16%)
2.	Apple iPad	495 (14.90%)	25.05%	124 (11.39%)
3.	Amazon KFTHWI Kindle Fire HDX 7 3rd Gen	70 (2.11%)	5.71%	4 (0.37%)
4.	Apple iPod	67 (2.02%)	49.25%	33 (3.03%)
5.	(not set)	56 (1.69%)	51.79%	29 (2.66%)
6.	Samsung SGH-I337 Galaxy S IV	43 (1.29%)	32.56%	14 (1.29%)
7.	Samsung GT-I9300 Galaxy S III	39 (1.17%)	20.51%	8 (0.73%)
8.	HTC Windows Phone 8X	26 (0.78%)	7.69%	2 (0.18%)
9.	Samsung GT-P3113 Galaxy Tab 2 7.0	26 (0.78%)	11.54%	3 (0.28%)
10.	Nokia Lumia 521	22 (0.66%)	31.82%	7 (0.64%)

Figure 12 Mobile Device Access of LMS

During her initial interview, Ava gave one of the most succinct descriptions of a traditional students experience when she stated "I mean, I do have a lot of work to do, but, um, I have to read for Miss Whitaker, I have to build a roller coaster for Mr. Koub, um, I have to write for Mr. Jones." Couple the academic demands of a rigorous schedule with other extra-curricular activities and the traditional AP students had even more demands on their limited time. Tim, who was also playing tennis during this semester, stated "I probably wouldn't have done as well, just because I barely had any time as it was." Roger, who was on the tennis team with Tim, found the ability to access the material after practice to be of great importance, "I have like tennis so I

don't get home till like 6.6:30 and so I eat dinner and then I just immediately go in to doing

homework."

Although the Non-traditional students were not carrying the course load of the traditional

students, they still had extra-curricular activities that put demands on their time. A large

percentage of the non-traditional students had jobs outside of school that put a strain on their

time to complete school work. Leo, who was working at a welding shop afterschool, stated, "Not

as much with academic stuff, but I had billions of things going on outside of school." Matt, who

worked at a local fast-food restaurant, believed the ability to "pick a day when I actually want to

do the quiz" to be extremely beneficial to his overall success. Another student stated, "…it's

easier to prioritize too because like with other classes like they have like mandatory, like, 'our

test is tomorrow,' or, 'Your paper's due tomorrow'." Zoe, who is a cheerleader and also has a

job outside of school, gave a wonderful synopsis of why a blended course works for her.

> Just because, I have a pretty big, busy schedule to tailor as well and so it helps me like,
>
> give me a time period to do it so I don't procrastinate, because I'm really bad at
>
> procrastinating. So I'll, if I had the choice to just oh you know, I'll just put it off, ill just
>
> put it off, but if I have like a time span and like I have, I can fit it within my schedule, I
>
> can be like, "This is the time," or "This is the day that I have to get it done because that is
>
> like the day I am not working or free, or not babysitting or something.

Whether traditional or non-traditional, the flexibility afforded to the student in a blended

course allowed the student to schedule their limited time accordingly.

Usage logs demonstrate that on average, participants spent 18 hours logged into the

Moodle® LMS (see Table 1). Both traditional and non-traditional students spent this much time

in Moodle®. However, both traditional and non-traditional students had one outlier. Anita spent

30 hours logged into the course and Rene spent 64 hours over the semester. I found that the non-traditional students spent more time with the content and the formative assessments while traditional students spent more time with the content alone. As an example Rene took a single formative assessment twenty-one times to receive a score of 85%. When I asked him about assessments in his follow-up interview, he admitted that he needed to take the formative assessments multiple times, "yes, um, I think the lowest amount of quizzes I've taken on like a whole one is like 20-something." When that is compared to Tim who attempted the formative assessments "between 1 and 4 times" there is a difference in time with the material.

Table 1

Participant Access time in Moodle LMS

	Traditional AP Students			
	Anita	Tim	Ava	Roger
Time Reported in LMS	30 Hours	18 Hours	17 Hours	15 Hours
	Non-Traditional AP Students			
	Rene	Leo	Matt	Zoe
Time Reported in LMS	64 Hours	17 Hours	18 Hours	19 Hours

My findings show that although both the traditional and non-traditional students spent roughly the same amount of time in the LMS, when they accessed it provided some further insight into their day (see Table 2). The traditional students accessed the LMS largely in the afternoon or evening hours (between 12:00 p.m. and 10:00 p.m.). Ava did not access the LMS after 10:00 p.m. a single time, her last logged time was 9:47 p.m.

Table 2
Participant Access by Time of Day

	LMS Access	Early Morning	Morning	Afternoon	Evening	Late Evening
Traditional AP Students						
Anita	1022	0%	13%	18%	38%	31%
Tim	753	0%	0%	32%	56%	12%
Ava	840	3%	22%	34%	41%	0%
Roger	726	2%	7%	31%	41%	19%
Non-Traditional AP Students						
Rene	1602	0%	7%	2%	54%	37%
Leo	516	0%	14%	18%	44%	24%
Matt	469	1%	11%	11%	23%	54%
Zoe	520	2%	3%	22%	23%	50%

The non-traditional participants, however, developed a different pattern of access. The non-traditional students accessed the LMS over 70% of the time in the evening or late evening hours. This suggests that the participants were able to make the course fit their schedule according to their needs. Zoe, the working cheerleader, accessed the course 50% of the time after 10:00 p.m. due in part, "because that's when I'm not working, but that's when I sit down and study and do my things that I need to make up."

The time management and flexibility that the participants mentioned is echoed in the data from Google Analytics® and reports from the LMS. Reports generated in Google Analytics® highlight the fact that 17% of access to the LMS was from some type of mobile device, either a tablet or a phone. Another report shows which internet provider/network is used to access the

LMS, with the districts network being utilized only 5% of the time. Access to the LMS is

dominated by home and cellular network providers (see Figure 4).

	Service Provider ?	Acquisition		
		Sessions ? ↓	% New Sessions ?	New Users ?
		16,052 % of Total: 100.00% (16,052)	34.27% Site Avg: 34.27% (0.00%)	5,501 % of Total: 100.00% (5,501)
☐	1. windstream communications inc	5,730 (35.70%)	34.38%	1,970 (35.81%)
☐	2. comcast cable communications holdings inc	5,144 (32.05%)	37.15%	1,911 (34.74%)
☐	3. comcast cable communications inc.	1,167 (7.27%)	22.37%	261 (4.74%)
☐	4. georgia department of education	863 (5.38%)	41.14%	355 (6.45%)
☐	5. service provider corporation	813 (5.06%)	32.60%	265 (4.82%)
☐	6. (not set)	628 (3.91%)	28.18%	177 (3.22%)
☐	7. cellco partnership dba verizon wireless	232 (1.45%)	40.09%	93 (1.69%)
☐	8. sprint nextel corporation	151 (0.94%)	35.76%	54 (0.98%)
☐	9. t-mobile usa inc.	142 (0.88%)	38.73%	55 (1.00%)
☐	10. frontier communications of america inc.	134 (0.83%)	31.34%	42 (0.76%)

Figure 13 Internet Service Provider Accessing LMS

It appears that the flexibility of a blended course alleviated stress from both groups of

students. However, the findings suggest this benefit seemed to impact non-traditional students to

a larger degree than the traditional students. Comments from the non-traditional students

included, "It's a lot more fun, you're not as stressed about the work." Zoe felt that without

having a blended style, "I think it would make me a little bit more stressful because if I can't get

that time in to study." The non-traditional students mentioned that taking an AP course for the

first time was initially very stressful, as Leo stated; "This class is definitely challenging, but I

think in a traditional setting, you'd be more of a hard class to actually succeed in." Matt stated,

"This was my first AP class, so I didn't know how that all worked." Rene found that the

flexibility made the course feel, "...a lot more laid back, a lot more relaxed."

The traditional students also believed that the flexibility in a blended course alleviated

some of their stress. When I asked Tim how he would feel if this course was not blended he

emphatically stated that it would, "Definitely make me more stressed." When I asked a follow-up question he nodded and quickly responded, "The flexibility definitely relieved a lot of stress." Anita found the course to be:

> It was crazy but it was also less stressing, because I know that topic in and of itself, my god, this is so stressful and I sit here and I'm like, this is easy, it's fun easy, it's not stressful.

> Other's echoed this sentiment in their interviews, "it would be a lot more stressful for us because there'd be just so much to do on top of all the stuff."

Increased Interaction

Because this course is designed so that there is very little in-class lecture time, and all the assessments are taken online I had more time to work with the students in class. Unlike the traditional classroom experience where students are limited in their interaction with the teacher, the material, and each other, this blended course gave the students' opportunities to engage with me in meaningful and productive ways. As a majority of the initial instruction was online, as were all the formative and summative assessments, I had more time for group work within the allotted class time. This in-class group work was only one area where the students interacted with peers. The students also interacted asynchronously through online discussion board postings. Anita, a traditional AP student, found that working with her peers was very beneficial, "I learn from the table around me." She also stated, "We have your here to immediately ask questions." For Leo being able to communicate with his peers outside of the classroom was extremely helpful, "We can text our friends or whatever and they will, sometimes they maybe just as lost as you are, and we have a judgment on whether or not we need to go ask the teacher how to do this." Leo, much like Anita, when interviewed brought up how the in-class group

work aided in his overall understanding of the materials, "Each person had their strengths and each person had their weaknesses. They could work together to teach each other."

I found that all the participants were in a consensus when it came to how working with their peers aided in their understanding. Comments such as, "because I learn off of other people, too, because I sit next to Laura, she's really smart, but she'll like help me figure out new ways to like learn things." Tim, who was always changing seating to work with different peers depending on the activity, highlighted this concept when he stated:

> The way you approached it was different. Instead of just going through everything, we more practiced the stuff, worked on the actual material and then learned it, and then practiced it. We would just come straight in and work on stuff, and you were there if we had questions. It was opposite. You can just get right into working on it and practice.

When I interviewed the non-traditional students they also brought up the benefits of working with their peers in class. Statements such as, "We can come to you later on and figure out how to get around our weak points." When Matt, who normally worked alone, was asked about how the in-class work supported his learning he stated, "Some of it, sometimes. Actually, all the times." Leo, who most often relied heavily on Roger during the in-class activities, stated, "In your class we had more interaction as a class and you…We could work together to solve problems. In other classes you do it by yourself more often than not." Another student mentioned, "It seemed to make more sense whenever we could work together. Then you would get up in class and talk about it."

Participants also brought up how the communication between the teacher and student helped them in the course. Most of the traditional AP students have had experience with enhanced student-teacher communication. Each one of them mentioned multiple teachers who

have used communication tools in their classroom. Anita found this communication to be deeply personal, "But on a more personal level, I know that you took the time to answer my questions outside of school. Like, you're not being paid to do that outside of school, so it definitely says a lot about you as a teacher." Ava liked having Remind101 in her classes, "Um, yea, it's pretty nifty." Remind101® is an online service that provides teachers a platform to text students and parents without giving out their personal phone numbers. However, she also pointed out a shortcoming of the Remind101® service, "Because with Remind101, you can say, you have to wait to talk to your teacher. You have- you can't text them back." In order to overcome this issue, the course in this study also used Google Voice to communicate with the students. Tim also found Remind101® helpful in keeping his busy schedule organized, "I like being reminded, because it's, um, it's more helpful, too, like for my calendar, because they remind about something, I can put it in there real quick if I forgot to." Roger found the enhanced communication to be helpful when compared to non-blended courses:

> It's a, us, a lot better after, like outside of school time because you can just, ah, you have a lot more ways to communicate with the teacher. Like, I don't have much ways to communicate with Miss Mickley if it's after her class period.

I found that the participants extended their classroom experience by being able to contact me directly through Google Voice®. I found that the questions posed by the participants ranged from simple clarification of assignments to more content specific questions. In an interview with Rene he mentioned how during a snowstorm the ability to send me a text message was helpful, "Ah, my, um, internet went out and so I had texted and told you about what had happened and you gave me an extension on my like paper." Other texts involved conversations between myself and students regarding content questions:

Student: "New automobiles and used automobiles are substitutes. Suppose the prices of new automobiles increase. Then..." The answer I put was "the quantity demanded of used automobiles increases." But the quiz says the correct answer was just "the demand for used automobiles increases." I thought that price doesn't affect demand itself, only QUANTITY demanded...? 9:32 PM

Teacher: Price of the good doesn't shift the demand curve. But the price of other goods does. Substitutes and compliment price changes impact demand 9:41 PM

Teacher: In classroom salon it's the shifts in demand video 9:43 PM

Student: Thanks!!

From the time stamp of this conversation, it is apparent that the student felt comfortable asking me questions well after the school day had ended. This student needed help with a concept and I was available to help when I was most needed.

Mastery and Understanding

Assessment and remediation play a significant role in the administration of this course. In each unit of instruction, students completed multiple formative and summative assessments. As discussed in Chapter 3, all formative assessments are low-stakes. Participants were able to take these formative assessments as many times as they felt necessary for them to achieve the score that they desired. In order to evaluate how this impacted participant's performance, I compared their original (first attempt) score with their final attempt. The ability to take a formative assessment, get immediate feedback and then retake a similar assessment proved to be extremely beneficial to the participants. Unlike a traditional class, the participants were able to immediately see where their deficiencies were and address them prior to their next attempt. Research question two fell under this theme and is addressed in the following section.

When I asked the participants if they had mastered the content better in a blended course than they believed they would have in a traditional class, all the participants responded in the affirmative, with most responses occurring without any hesitation. In this area I found there to be little distinction between traditional and non-traditional students. Traditional students responded by saying things such as, "It was nice to just watch a couple five-minute videos or minute videos, and be able to come in, and just learn it here, and get a mastery of it here because I had so much other stuff to do." And "To some extent it's better than what I knew before. I can use the terms that I learned and I can explain it, maybe not for days on end but I can explain it to a point and know what I'm talking about and try to make sense of it to someone else." Tim stated that "I feel like you get a much better understanding because you've gotten a lot of exposure." Anita, whose father is an accountant and had told me of their many dinner time discussions, was positively beaming when she articulated her level of content mastery as follows:

> I definitely learned a lot in beneficial ways. I would go home and my dad and we'd be
> talking about something he learned and I could definitely chime in and be like, 'Hey, I
> know what you're talking about, I learned about that'

The non-traditional students also felt that they mastered the material at a higher level in a blended course. Matt who did not take the AP exam but did take a practice exam, stated, "I felt like I'd learned a lot more and was more prepared when it came down to the AP test and ACT's." He followed up his initial thought by stating that he learned the material "… much better. More thorough." Another student, when asked to compare how he might have fared in a non-blended course stated, "Probably worse because it would've just been a big loophole being confused and lost." Zoe really appreciated the set up of the course in aiding her understanding, "I'm a slow learner, kind of, I'll slowly progress, like once I get it I have to continue to do it to

understand it better, so the more practice I do it's the more I learn, but, um, I am, I am learning and understanding a lot better."

In my analysis of student forum posts throughout the semester, the findings further illustrated this increased understanding with the material. In their first attempts at the *Economics Literacy Project* (ELP), student analysis of their articles was cursory at best. Comments leaned more towards the topic of the article and not on the underlying economic theories at play. Comments such as "I'm definitely letting my mom read this, she loves sea food, but doesn't know it's dangers", and "I don't follow sports, but I usually watch the Super Bowl" illustrated their low level of economic understanding at the beginning of the course. However, as the course went on, I found that the students became accustomed to the economic terms and the discussion evolved to a higher level. Roger gave a very interesting analysis of another students post about Netflix and the Fall of Blockbuster.

> Not only Blockbuster, I think TV as we know it will be altered by Netflix and other streaming services. I mean, no commercials and original broadcasting? That's awesome. I'm not saying TV is going to die, but it will be forced to change to keep up. Hopefully that means less commercials.

In this unit we were discussing the idea of disruptive innovation and how startup industries can compete with larger companies by effectively changing the entire landscape of the market. Roger was able to succinctly articulate this concept and give his peer something further to comment on.

All economics students in the state of Georgia are required to take an End of Course Test (EOCT) which is designed to test their mastery of the economics standards. All participants took the state assessment in the final month of the study.

Table 3

Participant Results on End of Course Test

	Traditional AP Students			
	Anita	Tim	Ava	Roger
State Exam Performance	Did Not Meet	Exceed	Exceed	Exceed
	Non-Traditional AP Students			
	Rene	Leo	Matt	Zoe
State Exam Performance	Exceed	Exceed	Meet	Did Not Meet

Participant performance on the EOCT was mixed. Anita and Zoe both *Did Not Meet* the standards set forth by the state. Otherwise, all the traditional AP students scored an *Exceed*. Only Matt scored a *Meets* on the exam. At the end of the semester, the participants also had the opportunity to take the AP Exam in Macroeconomics. This exam is not a requirement for successful completion of the course, but if a student scores a 3 (on a scale of 5) or better they can get college credit. Of the participants, only four took the exam this year with Leo being the only non-traditional student to take the exam.

Table 4

Scores on Advanced Placement Macroeconomics Exam

	Traditional AP Students			
	Anita	Tim	Ava	Roger
AP Score	N/A	4	4	4
	Non-Traditional AP Students			
	Rene	Leo	Matt	Zoe
AP Score	N/A	2	N/A	N/A

When I asked the participants why they did not take the exam the participants gave me two main reasons. For Anita and Rene it was financial reasons, the cost of an AP exam is $87.^{00}, and for them that was too much money with graduation pending. When I asked Zoe and Matt why they chose to not take the exam they informed me that having never taken an AP course before they did not feel the need to take the exam.

Although there was consensus between the students when I interviewed them about their level of success in terms of their overall grade, the non-traditional students believed that a blended course had more impact on their grade than the traditional students. Rene believed that a non-blended course "would definitely bring it down [his grade]." Matt also believed that he would do "probably worse" and "probably really bad" in a non-blended course. He also believed that, "I'd probably; I'd probably be like a whole letter grade, like 5 or 10 points difference." Another non-traditional student felt that her grade in the blended course was "greater, but not much greater" than it would have been in a non-blended course. In terms of grade performance, the non-traditional students all thought that a blended course led them to have a grade that was at least a half a letter grade higher than it would have been otherwise.

Ava believed that a blended course gave her a 20 point increase "I'm like at a flat 90% I think right now so I think I would have been at a 70%." Other traditional students did not feel that their grade was that much different from where it would have been in a non-blended course. Tim believed that his grade would "be about the same". Roger, the quintessential AP student, who stated "I think the grade would be about the same but I prefer it the blended way."

Although there is no way to definitively prove that the participants grades were greater in this class, data collected on the participants' performance on formative and summative assessment corroborate the participants beliefs. On the Unit 1 quiz (see Table 2), Rene took ten attempts to reach a minimum score of 70%. Anita took five attempts until she received a passing score. Looking at their initial scores, Anita would have posted a score of 40% and Rene a score of 35% if only their initial attempt had been scored. Of interest is Tim; Tim scored a 70% on his first attempt but continued to attempt the quiz twelve more times until he finally achieved a perfect score.

Table 5

Participant Attempts to Mastery and Grade Report Quiz 1

	Attempts to Mastery	Attempts after Mastery	Initial Grade	Final Grade
Traditional AP Students				
Anita	5	0	40%	90%
Tim	1	12	70%	100%
Ava	1	0	90%	90%
Roger	1	2	70%	85%
Non-Traditional AP Students				
Rene	10	1	35%	85%
Leo	8	0	35%	80%
Matt	2	1	55%	90%
Zoe	5	0	40%	70%

I found this pattern continued in subsequent formative assessments. Tables 3 and 4 further highlight this overall trend in student performance. For example, Rene attempted Quiz 2 13 times before he reached a score of 70%. He continued to take the assessment six more times until he scores 86%. In a more traditional class, he would have posted his original score of 40%. Tim also benefited from this type of course, his original attempt was a score of 71%, which is passing but he continued to attempt the assessment until reaching a score of 97%.

Table 6

Participant Attempts to Mastery and Grade Report Quiz 2

	Attempts to Mastery	Attempts after Mastery	Initial Grade	Final Grade
Traditional AP Students				
Anita	8	1	40%	89%
Tim	1	6	71%	97%
Ava	2	2	63%	83%
Roger	1	2	77%	91%
Non-Traditional AP Students				
Rene	13	6	40%	86%
Leo	5	0	40%	71%
Matt	4	0	31%	71%
Zoe	4	2	43%	94%

Table 7

Participant Attempts to Mastery and Grade Report Quiz 3

	Attempts to Mastery	Attempts after Mastery	Initial Grade	Final Grade
Traditional AP Students				
Anita	9	0	33%	70%
Tim	2	0	67%	90%
Ava	1	3	70%	83%
Roger	1	0	70%	70%
Non-Traditional AP Students				
Rene	24	1	17%	77%
Leo	5	0	40%	71%
Matt	4	0	31%	71%
Zoe	4	2	43%	94%

Quiz 3 seemed to be challenging for the participants. Rene had to attempt the assessment 24 times before he successfully scored higher than 70%. His initial score on the assessment was only 17%. Anita also struggled with these concepts taking nine times to successfully score 70%.

However, in this class quizzes only account for 20% of the final grade. Summative assessments such as unit exams count for 40% with the mid-term exam counting for 15% separately. Because participants were able to take remediation exams after failing the initial exam, their overall grades increased. Only one traditional AP student required remediation on the first formative assessment. Anita scored a 63% on her first attempt, but after watching the remediation videos she needed only one additional attempt to attain a 70% score. Comparatively, of the non-traditional students only one did not need the remediation. Rene scored 85% on his

first attempt. Leo, Matt, and Zoe all required two or more attempts at the assessment in order to

score of 70%.

Table 8

Participant Attempts to Mastery and Grade Report Exam 1

	Initial Summative Score	Attempts to Mastery	Final Grade
Traditional AP Students			
Anita	63%	2	70%
Tim	92%	1	92%
Ava	75%	1	75%
Roger	85%	1	85%
Non-Traditional AP Students			
Rene	85%	1	85%
Leo	58%	2	70%
Matt	35%	3	70%
Zoe	50%	2	70%

In terms of the participants overall grade, initial scores such as what Leo, Matt, and Zoe

achieved on the first exam would have been difficult to overcome over the course of the

semester. I found that subsequent summative assessments showed similar results, with a majority

of the non-traditional students needing additional attempts in order to score 70%.

Changing the Student-Teacher Dynamic

How this course prepared students for the future emerged as a significant factor for the participants. As this course is taken by students in their final year of high school, the participants are preparing to graduate. These participants were in the last semester of their final year, and were graduating at the end of the course. Although a large percentage of the participants had been accepted to college, there were a few students who were planning to go directly into the workforce. Both groups believed that both the content of the course and its delivery method prepared them for life after graduation.

When asked to describe their experiences in a blended AP class, all the students described what can be best identified as a different atmosphere within the classroom. Students identified a more collegiate experience and one where there was a friendlier relationship between me and them. Anita was extremely deferential when she stated, "You make it more comfortable for students to be unaware of what's going on, and ask questions about it." When I asked her to develop her point about our interactions she described the student-teacher interaction as such, "this class is very like relaxing and comfortable in the fact that we can interact with you." When Zoe was asked about how her experience in the blended class compared with that of a more traditional class, she was quick to say:

> I've had teachers who just stand up at the front of the classroom and read what's on the board, I'm like, 'I can read it too! Explain it to me!' But I like, I like how you can like, write it down on the board and explain what is actually being said on the notes.

When I asked Matt about our interactions he commented:

> I like how you treat us like adults; you don't treat us like little kids like every other school, like every other teacher in the school. And so, yea, you treat us as if we're, like,

about to graduate, like, we're actually seniors. All the other teachers are, like, they treat

us like little kids. You respect us and you talk, when you talk, when you teach you use

terms that, like, adults would use, you don't. Like, dumb it down for us. You just tell it

how it is because you know that we'll understand.

Other students echoed these sentiments when they noted, "you treat us like adults" and

"we're not kids anymore, and you don't treat us like one"

When I asked if they felt a course taught in this manner prepared them for their future, all

the participants answered in the affirmative. Rene stated, "I have a feeling it's more similar to

what college is...I guess more preparation for college...it's going to make the transfer to college a

little bit easier." Ava mentioned that this course was similar to her sister's experience in college,

"That sounds like what my sister does. She's at college." When pressed to explain further she

said, "I think the way you run it is more college like, because it gives us more responsibility to

learn the material." When he was asked if he felt this class was more like college he answered,

"It's probably going to be exactly the same from what I've heard about college." Roger felt,

"blending classes will definitely help the transition to college." As illustrated in Figure 14, large

universities are implementing LMS within their courses.

	ANGEL	BbLearn	Canvas	D2L	Moodle	Sakai	Other	None
Institutions	123	817	232	221	339	99	201	31
2014 method	6.4%	42.2%	12%	11.4%	17.5%	5.1%	10.4%	1.6%
2013 method	6.1%	40.2%	11.4%	10.9%	16.7%	4.9%	9.9%	-
Enrollments	809,654	7,192,050	2,283,841	2,029,070	2,454,569	1,112,068	1,856,040	110,068
	5.1%	45.7%	14.5%	12.9%	15.6%	7.1%	11.8%	0.7%
Average Size	6583	8803	9844	9181	7241	11,233	9234	3551
Median Size	4552	5585	5828	6388	3723	5519	3592	2950

Figure 14 LMS Implementation Enrollment Greater than 2000 Students (Kroner, 2014).

But it is not just the large universities that are implementing LMS, Kroner (2014) further

analyzed the data starting with schools with enrollment of 800 and found similar data (see Figure

15).

	ANGEL	BbLearn	Canvas	D2L	Moodle	Sakai	Other	None
Institutions	181	1055	290	277	614	125	522	232
	5.7%	33.5%	9.2%	8.8%	19.5%	4%	16.6%	7.4%
Enrollments	880,497	7,525,168	2,365,806	2,104,870	2,826,265	1,114,732	2,253,807	364,887
	5.1%	43.5%	13.7%	12.2%	16.3%	6.4%	13%	2.1%
Average Size	4865	7133	8158	7599	4603	9158	4318	1573
Median Size	3318	4189	4358	4802	2129	4601	1597	1295

Figure 15 LMS Implementation, Enrollment Greater than 800 Students (Kroner, 2014).

By exposing students to the type of environment that they can expect to experience at the

university level, blended learning in K-12 is preparing them for the future.

Matt, who is unsure of his future plans, still believed the course prepared him for his future. He specifically mentioned his experiences with the stock market project and his discussions with the researcher about the stock market:

Yeah I like that game, it's kind of like real world because I like, like, seeing how successful you've been in life from stocks, like, I'll, I want to be able to, like, do stocks and I want to know what stocks I can buy and how, like, the market works in the real world.

As of the end of the semester, Matt had a 12% return on his portfolio, and had outperformed the researcher by 8% over the same time period. Leo also commented on the impact that the stock market project had on him, "It's like I'm going to know what to do when I get a job that has, like, retirement and all that." Leo, much like Matt, had a double digit return on his portfolio. Leo visited me after he graduated and had taken a job with a local welding firm. He relayed to the researcher how the stock market project had a real world impact on him, "When they gave me my benefits package, I knew what it all was. I knew how to choose the, like, stocks for it. I even had my friends asking my help. So thank you."

Rank	Name	Net Worth	Today's Returns	Total Returns	# of Trades
1	▮▮▮▮	$119,561.28	0.00%	$19,561.28	12
2	▮▮▮▮	$109,869.01	0.00%	$9,869.01	40
3	▮▮▮▮	$109,300.60	0.00%	$9,300.60	9
4	▮▮▮▮	$102,912.68	0.00%	$2,912.68	3
5	▮▮▮▮	$102,358.65	0.00%	$2,358.65	18
6	▮▮▮▮	$102,022.18	0.00%	$2,022.18	39
7	▮▮▮▮	$98,614.10	0.00%	-$1,385.90	37
8	▮▮▮▮	$95,853.83	0.00%	-$4,146.17	15
9	▮▮▮▮	$93,935.43	0.00%	-$6,064.57	27

Figure 16 Market Watch Virtual Stock Market Project

All students noted that they felt that we had developed a different type of student-teacher relationship. Ava stated that, "the way you take the time to meet all of our needs" and that "you kind of reach out to everybody and not just like, "watch the video, and if you don't understand it, I'll explain it." Anita followed up by saying, "You're okay with us not getting it and saying, 'if you don't get it, ask questions'" When asked to develop her comments, Anita quickly added, "you care about us understanding." She went more in depth on the topic later in the interview;

> It wasn't always, Mr. Gagnon ... It was how can Mr. Gagnon benefit you and do you need videos or do you need me to put on the board, or do you need the interaction graphs. That kind of thing, that was very helpful for me. The fact that it wasn't my way or the high way kind of thing, or if you don't get it you can come talk to me at my desk or anything. The fact that you would just walk around to each table as well and make sure we're all on

task. But more importantly, if we needed any help with anything you were always hovering around ... not hovering, but you were walking around. So it wasn't intimidating to come up to you at your desk and be like, "I hope I'm not bothering him," that kind of thing like that.

When Leo was asked to compare this class to his other classes he stated, "But the [other] teachers I just feel like they don't care enough to do it." Tim mentioned that this caring, "it's nice because like I said, it shifts the motivation." One student said, "I like, I like, how you are not only teaching us the stuff for the class, but also stuff so we can be, you know, successful in life." Another student stated, "you don't just want us to pass, you want us to, like, learn so we can be rich, and not make, like you say, stupid mistakes with our money."

Conclusion

This study was an instrumental case study evaluation of traditional and non-traditional AP students' experiences in a blended learning AP Macroeconomics course during the 2013-2014 school year. This study consisted of interviews with eight students, online data, academic performance data and communication transcripts. From this data themes were identified related to use of time, overall learning, discourse, and overall classroom experiences. The findings suggested that a blended course allowed the participants flexibility and the opportunity to manage their time more effectively. The study also found the ability to access the course content on "their time" was one of the reasons the participants experienced less stress in this course.

Although both traditional and non-traditional students believed that a blended course increased their overall learning, the non-traditional students believed that they were more successful as a result of the course design. The study found that participants from this group would have potentially scored a letter grade lower if this class had been taught in a traditional

manner. This study shows that the ability to retake formative and summative assessments as the primary reason for the participants grade being higher. The study also shows that traditional students believed their grade would be lower than but not as low as the non-traditional student. The study found that the groups believed they learned more than their grade represented.

The study found that both groups credited the enhanced discourse in the class as a factor in their success. Being able to communicate with me through text, email, and twitter allowed them to ask questions while they were working on the materials at home. This communication led them to feel comfortable asking clarifying questions about the material and get feedback when they needed it most. This study also found that the reminders sent out by the LMS and by me via Google Voice® directly helped them to stay organized and focused on the requirements of the course.

The study also found that the participants' experiences in the course were identified as a more adult experience. Participants described my interaction with them as more caring, treating them like adults, and more reflective of the realities they would experience once they attended college.

CHAPTER 5

DISCUSSION, IMPLICATIONS AND RECOMMENDATIONS

Introduction

In the prior sections, this dissertation has addressed the need to investigate the perceptions and experiences of students in an AP Macroeconomics course taught using blended learning. It also put forth literature that contributed to the development of this study, a description of the methods used in the study, and the findings of the study based upon the research method. In this closing chapter the author revisits the conceptual framework for this study, and suggests modifying the blended learning conceptual framework to incorporate Carroll's Model of School Learning. The author also addresses the implications for school and district leaders, as well as classroom teachers. The author also addresses the need for further research into these topics.

Discussion

The purpose of this study was to explore the perceptions and experiences of traditional and non-traditional students in an Advanced Placement course taught using a blended model. This topic was borne out of three mitigating factors. The first being a belief by the College Board that schools consider any student for enrollment in an AP class as long as the student expressed a desire. The second factor is the decrease in instructional time that many schools are facing. The third factor was a shifting in teaching methods to a more blended learning environment, where some of the learning takes place outside the walls of the classroom. The singular topic that all participants mentioned was their belief that they were more successful and learned more in this type of classroom setting than they would have in a more traditional course. The researcher believes that it is how Carroll's Model of School Learning manifests itself within a blended

learning framework that accounts for this phenomenon.

Model of School Learning

In order to properly address the implications of the study, it is necessary to revisit the

conceptual models that framed this study. Carroll's (1963) model of school learning proposed

that:

$$Degree\ of\ Learning = f(time\ actually\ spent/time\ needed).$$

As addressed in Chapter 2, Carroll further defined *time spent* as a function of *opportunity* and

perseverance. He defined *time needed* as a function of *aptitude, ability to understand instruction,*

and *quality of instruction* (Carroll, 1963). Carroll's formula can then be written as:

$$Degree\ of\ Learning = \frac{Opportunity,\ perseverance}{aptitude,\ ability\ to\ understand\ instruction,\ quality\ of\ instruction}\ (Huitt,\ 2005).$$

By expanding Carroll's model of school learning, the impact of blended learning can be

evaluated. Discussion of Carroll's formula will begin with the factors that impact time needed

first, and then move on to factors that impact time spent. Huitt's expanded model (see Figure 5)

provides a useful visual of Carroll's formula for the forthcoming discussion. Huitt's model starts

with the students' prior *aptitude*. From there, Huitt flows into the opportunity to learn, ability to

understand instruction, quality of instruction, and perseverance. These then produce academic

achievement. In Huitt's model, all of these factors are on the same level; opportunity to learn has

an equal weight as perseverance.
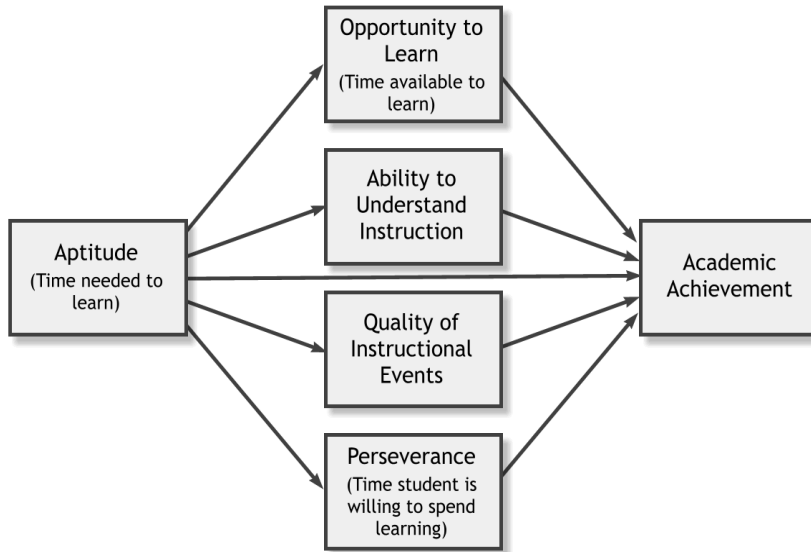
Figure 17 Huitt expanded Model of School Learning (Huitt, 2005)

Aptitude. Each of these participants came to this class with a different *aptitude*, as defined by Carroll. As Anderson (2000) expanded on this definition by stating;

> If aptitude is indeed capacity to learn, why change schools? No matter how schools are
>
> configured, no matter what curriculum is taught, no matter how teaching proceeds,
>
> students with the necessary capacity will learn while those without it will not. It is only
>
> when aptitude is defined in terms of time needed to learn that increasing opportunity to
>
> learn can be justified (p. 17).

Berliner (1990) also expanded on the definition by equating aptitude with the time necessary to reach criterion in a particular area. He further commented that students are not expected to display the same aptitude.

Using Tim and Rene as examples, although both of these participants were identified as gifted, Tim had taken more than five AP classes throughout his high school career. For Rene, this was his first time attempting an AP course. Of all the factors in Carroll's model, blended

learning would seem to have the least impact on *aptitude*. Carroll further defined *aptitude* as having some basis in prior learning. If that definition is used then blended learning could impact *aptitude* if all courses in a particular school were blended. For example, Matt mentioned, "it is my first AP class and it's a lot more work ethic that I'm not used to." This would provide a schema for how the class is run, and help to alleviate some of the lack of familiarity.

Ability to understand instruction. Providing students with instruction that is differentiated for them is a topic that all participants mentioned as contributing to their success in the course. Participants specifically mentioned the ability to have content provided to them from different sources. Some participants were very specific in which content they preferred, "there's some of us who like Econ Girl, and there's some of us who like Clifford, and then there's some of us who….didn't like either of them." One participant went so far as to say, "I watch a video about something I don't understand, I'll watch that. And then I'll, you know, feel confident." The participants realized that the presentation of material in this way increased their ability to understand the instruction.

The participants also credited contact between their peers and the teacher as increasing their ability to understand the instruction. Leo mentioned how he would, "go to one of my more intelligent friends and ask for their assistance." Anita also mentioned how this communication helped her ability to understand the content, "I would text message the teacher and say, you know, 'Okay, what were the steps that you took in class?' Let me know, write that down, or engrave that in my head so that I know when I'm doing this next problem how to do it." Carroll also discussed the fact that prior learning or exposure may have some impact on *aptitude*. Taking two participants, Tim and Rene, as examples helps to clarify blended learning's impact on the degree of learning as defined by Carroll (1963).

Quality of instruction. All participants agreed in that how this course was structured changed the quality of the instruction for them. Because the course was structured in such a way as to provide more time in class to work on the concepts the students felt that the quality was better, "I feel like it's, this class is a lot more productive." Another participant noted that in this class, "People come excited to your class because they know we won't be listening to you lecture the entire time. We know you are here to work with us and help us with, like, the stuff we're having trouble with." Participants stated that they preferred the video instruction to the more traditional textbook style. Participants stated that the videos, "got to the point" and reading a textbook was just, "a waste of my time." When asked directly about having a textbook in the class versus the way it was run, Ava emphatically stated that "I'd probably cry." Other's echoed Ava's statement with comments such as "no one would read it." Another participant, when asked how the class would be without the video portion stated emphatically, "That would be awful! Especially if we didn't have the videos." Another participant mentioned that the in-class work was more beneficial, "I feel that it makes you stay more on topic and you're not just kind of doing the work to do it, you're actually having fun learning it."

Opportunity. It is important to look at both Tim and Rene's final scores in the class as a starting point for this discussion. Tim, a traditional AP student, posted a final score of 96% in the course. Rene, a non-traditional AP student, posted a final score of 87 in the course. Both scores would indicate a higher degree of learning had been achieved by each of the participants. But delving further into the formula will help to discern the differences in the two participants. Starting with *opportunity* the differences begin to appear. Although all participants hypothetically all had the same 24 hours available to them, Carroll's definition of *opportunity* does not measure it in that context. Carroll's definition of *opportunity* is based upon the

"deliberate, not informal attempts to teach particular things" (Berliner, 1990). By providing the participants with the *opportunity* to engage deliberately with the material, the blended course adds value.

Tim accessed the materials 753 times over the course of the semester, compared with Rene's 1602. Tim also spent 18 hours in the LMS, compared to Rene's 64 hours. Looking at the data from the LMS, it is apparent that Rene had more *opportunity* with the materials. All participants in this study commented on how the ability to interact with the material and to take assessments multiple times impacted both their understanding and their performance. Tim, specifically mentioned it when he stated, "Um, I usually pass like the first time. But, um, then getting it up to like an A, it takes me probably about 4 or 5 times."

Perseverance. How each of the participants interacted with the material is also important. Rene spent more time trying to reach mastery level on all assessments when compared to Tim. Yet, Tim spent more time attempting to increase his score. On every assessment, Tim reached mastery level on the first attempt, and then continued to take the assessment in order to raise his score. In this regard, both participants would be considered to have a high degree of *perseverance*, but their goal seems to be different. Tim worked extra to get a score beyond mastery, and Rene worked extra to prove mastery. Given a more traditional class setting, neither Tim nor Rene would have had the final score in the course that they did. In fact, given Rene's initial scores it is highly likely that he would have failed to pass the course completely. Rene was quite aware of this fact when he mentioned, "Um, I think the lowest amount of quizzes I've taken on like a whole one is like 20-something."

Blended Learning Framework

Carroll's model provides the framework to describe the process of learning, but the

blended learning framework provides the structure for where the learning takes place. It becomes

important to use this framework to place Carroll's variables in the proper context of blended

learning. It is through this framework that the impact of blended learning on Carroll's model can

be understood. It is also by using this framework that the implications for stakeholders can be

realized. As discussed in Chapter 2, the blended learning framework of Georgouli (2008) was

used for this study. Framework consists of four interconnects components; administrative,

community, content and activities. Within each of these components, "are tools devoted to

provide information, to motivate students, to setup activities, to assist interaction and to promote

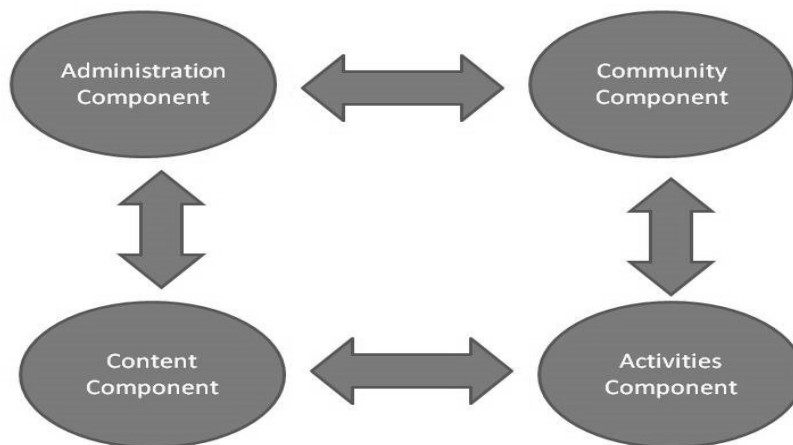production of new knowledge."(Georgouli, et al.)

Figure 18 Blended learning conceptual framework (Georgouli, et al.)

Taken separately these frameworks can be used to inform a study on blended learning.

However, this model needs to be enhanced in order to properly illustrate how the two models fit

together. Carroll's (1963) model has the student's learning as its central focus, but the Georgouli

model only implies the impact on student learning through the implementation of blended learning.

The International Association for K-12 Online Learning (iNACOL) (2014) recently released their blended learning teacher competency framework. This framework, like others, focuses exclusively on the teacher and what s/he is doing in the classroom environment (Christensen, et al., 2013). Each of the competencies proposed by iNACOL is designed to address what the teacher needs to be successful in implementing a blended learning environment (Powell, et al., 2014). While this framework does address the teacher, it lacks the fundamental integration of the student. In fact, within the standards put forth by iNACOL, the student is only mentioned in five of the forty presented. When the student is mentioned, it is only in shifting from teacher-led instruction to student-centered learning. There is no mention of how this will look or how the student will experience this new student-centered learning (Powell, et al., 2014). Although it is important for teachers to have a framework to help them implement and develop blended learning, it is imperative that the student be the focal point of any blended learning framework.

I propose a new model that starts with the student, is affected by the implementation of blended learning and impacting Carroll's formula, finally ending with the degree of learning.
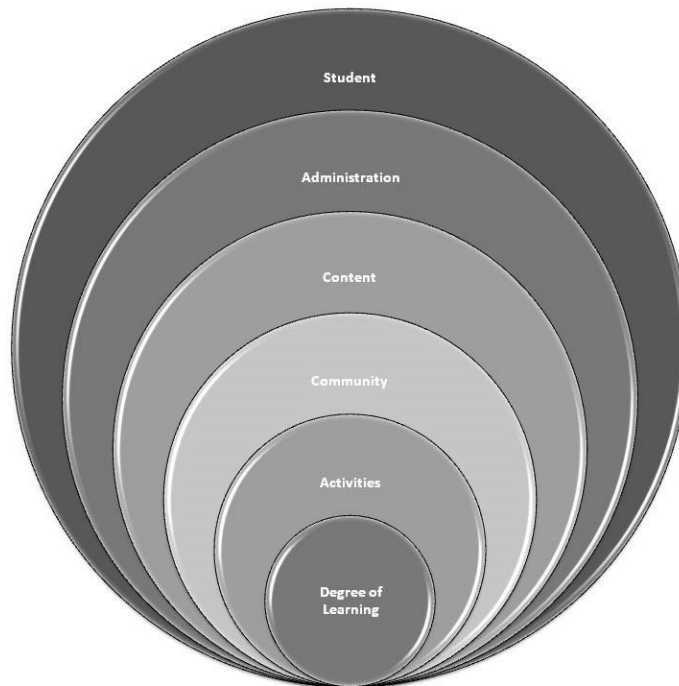
Figure 19 Enhanced Blended Learning Conceptual Framework

Student. The original model by Georgouli does not specifically address the student.

When in reality, the student is the variable both Georgouli and Carroll are attempting to affect.

This new model starts with the individual student and takes into account their prior *aptitude* and

their previous level of *perseverance*. Each of the participants, regardless of which group they

were in, had different levels of *aptitude* and *perseverance*, but as Anderson (2000) and Berliner

(1990) mentioned these concepts are now just time variables; they only impact time needed to

learn.

When a student enters a blended course there is some type of Learning Management

System usually in place. The first level of interaction the student has with the course is through

the Administrative component.

Administrative. The administrative component of the framework provides the statistical

information necessary to track student progress and their involvement in the course. This is also

the component that determines how the course looks and feels. This component is important in

that it determines the overall user experience in the blended course. When Carroll's variables are

evaluated in this framework, there are two variables that best fit this component; *perseverance*

and *aptitude*. *Perseverance* is put in this component because how the class is conceptually

designed has an impact on how often and how much overall effort they put into the course. Rene

mentioned that the course was, "not really too organized, so I didn't want to take the time to look

through and be like, "Oh, where are the videos at?' I was just like, oh well." Matt agreed with

Rene about the structure and organization of the course, "I stopped watching the videos. I never

knew when the videos were up or not, so I just gave up on the videos." Some participants felt

that the structure of the course made things easier for them. Anita felt that the course was well

designed because, "everything's just there."

Aptitude* is also positioned in the administrative component because course designers can

help provide students with a schema for blended courses. This is especially true for non-

traditional AP students. The movement to an AP course can be very challenging for students, but

having a familiar online presence can help to lessen the shock. Zoe mentioned this when asked

about her prior experience with the Moodle LMS, "We've used it for like three years in Warrior

Wednesday, so I'm pretty used to it." At Berlin High School, there are thirty courses that use the

LMS. Although these courses differ in their aesthetic layout, the overall student experience is

very similar. This prior knowledge can possibly have an impact on the aptitude of the student by

creating a familiarity and comfort level for them. Once the student has become familiar with the

Administrative component, they then can then begin to actively engage with the Content

component.

Content. The content component encompasses the variables of *ability to understand* and

quality of instruction. Given the data presented in Chapter 4 which shows how participants were accessing the course content, providing students with online materials that are accessible on all devices is extremely important. Content for this course was divided into notes and videos. Videos for this course were pre-created content from Youtube®, however, many participants mentioned that they wished the course teacher had created the content himself. Zoe felt that it would help her because, "like, it's easier to remember that than like another teacher trying to explain it and they can sometimes explain it in a different way and it's kind of like, 'Oh, but my teacher said this earlier....' So...it, it would help." Content was also differentiated to further aid the participants in understanding the concepts presented. Supporting the Content component is the Community component, which provides the student the ability to interact with their peers and the teacher outside of the classroom.

Community. The community component includes both the *ability to understand* and the *perseverance* variables. The access to the teacher, which the communication channels in this course provided for the participants, was extremely important for both traditional and non-traditional students. The ability to ask the teacher questions when the participants needed help, provided the participants with enhanced learning opportunities and desire to continue working towards learning. One participant mentioned how she would text the teacher to find out, "what where the steps that you took in class?" The same participant commented further, "you're okay with us texting you during a little quiz, and being like, 'Hey, I don't get this." The peer support that was developed in the classroom environment spilled over into the online interactions also. Participants mentioned texting each other with question about content. When asked, a participant commented "I texted her asking her about it, and then after a while I just kept studying it, and then when she finally texted me it gave me better understanding of what I needed to learn."

Once the students have acclimated themselves to the environment in the Administrative component, engaged with the instructional materials in the Content component, and extended the discourse in the Community component, they move on to manipulating the content to display mastery in the Activities component.

Activities. This component allows the teacher to manage homework and grading efficiently. This component is also important to the variables of *ability to understand* and *quality of instruction.* The decision of which activities the teacher should migrate to the online platform is an important one. Not all activities lend themselves to an online experience. Leo mentions that some courses "just put up assignments or just try and start from scratch, which doesn't work for me." Anita echoed that sentiment, "Um, it's mostly, just posting stuff on Moodle. There's not much, it's more just homework." She went on further to comment on what didn't work for her online, "For me, I need more than sometimes just a PowerPoint. I need hands-on, interactive graphs or something."

The online platform does lend itself to both formative and summative assessment, as well as simulations. Roger mentions the he liked, "taking quizzes and like test on them, I like doing that more." For Ava it was more than just liking taking the quizzes online, it was that it enhanced her learning, "I think the quizzes are actually really nice because it's not, oh, you got it wrong, you're gonna flunk. It's OK, you got it wrong, this is why you got it wrong, and here, let's try it again."

All of these factors lead to the final goal of the model, which is an increase in the degree of learning for the student. Through their interactions with all facets of the model, the student will achieve some degree of learning.

Degree of learning. The final outcome of this model is the same as Carroll's. In the end

how blended learning impacts the students' degree of learning is of the utmost importance to all stakeholders. Through their interactions with each of the blended learning components and their subsequent affect on the variables in Carroll's model, the student will reach some level of learning that can be evaluated by stakeholders. The implications of this proposed model are discussed in the following section.

<div align="center">**Implications**</div>

A discussion of the implications of this study will begin with the classroom teacher and then move up to school and district administration levels.

Classroom Teacher

Because this study focused on traditional and non-traditional AP students, a discussion of implications must begin with those classroom teachers. For the AP teacher, the influx of students who do not have the prerequisite knowledge presents a distinct challenge. For that teacher, adjusting all four components of the blended class may be in order. However, it may be more important for the classroom teacher to vary the content and activities components to best deliver content while making sure that the administrative component is standardized and familiar for the non-traditional students.

For most classroom teachers, the component that may pose the biggest challenge is the community component. Although most LMS have some type of community component and there are many Web 2.0 tools to help facilitate communication that also insulate the teacher from exposure, teachers may be hesitant to adopt these. Teachers will have to overcome their own fears when it comes to changing their teaching methods to accommodate the non-traditional AP student. If teachers adopt a blended learning method, they must also be aware that their instructional time will potentially extend well beyond the school day. Classroom teachers will

also need to become familiar with how to farm for differentiated content on the internet. These teachers will need professional development on where to find content, and how to manipulate that content to best deliver it in an online environment.

These concepts, however, are not just important to the AP teachers at a school. In fact, most of the courses that are taught in a blended model at the school in this study are non-AP courses. The concepts of modifying the blended components to impact Carroll's variables should have a similar impact on these courses. There are students who are in regular courses who do not come to class with the same abilities as others, and using a blended learning framework to support those differences may be extremely beneficial for those students.

School Level Administration

For the school level administrator, this study can influence professional development choices, how AP courses are implemented, and also help to increase enrollment in AP courses. This final implication can help to increase a school's perception within the community, and also help it to garner national recognition (Matthews, 2013). Given that the College Board continues to promote open enrollment it will become vital for school level administrators to put in place structures that support these non-traditional AP students. By implementing a blended learning framework in their AP courses, school level administrators can potentially impact the level of learning that non-traditional AP students enjoy.

If the school level administration determines that implementing this model is an effective strategy, they will need to make professional development available for the classroom teachers. These professional development courses will need to encompass all aspects of blended learning, not just the technology side but also the pedagogical side. As the new framework is implemented, students may push the administration to open more sections. The reason for this

may be the knowledge students have that colleges have moved to this type of model, and they want to be familiar with it. The opportunity to become familiar with an unfamiliar learning mode may be more comfortable for these students in a supportive high school environment. Administrators might also begin to look at promoting this model in non-AP courses. If enrollment continues to increase, there will be other decisions that need to be made at the district level.

District Level Administration

If schools begin to adopt a blended model, decisions will need to be made at the district level. Given the plethora of devices students in this study used to connect to course content, district level administrators will need to decide how to best deliver school content to all devices. Network bandwidth will also be an area that district level administrators will need to address. As more schools adopt Bring Your Own Technology (BYOT) initiatives, this bandwidth issues becomes even more pressing. Students may have multiple devices attempting to connect to the network at one time.

On the academic side, district level administrators may want to implement pilot studies of their own based upon these findings. Determining if an implementation similar to this study will work for their district may be an important factor. As blended learning permeates the school environment it is imperative that it not be only in the realm of Advanced Placement courses. By using blended learning teaching methods, such as the flipped model, the teacher has the potential to increase the individualized interaction with the students. This could be extremely helpful in those classes where the student perseverance trends low.

<div align="center">

Recommendations

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There are several recommendations the researcher would make for future studies related

to this topic. The first recommendation would be to perform this study with a larger number of students in the sample. This study evaluated the views of only eight students, and while there were some clear themes that emerged during the interview process, this is a small sample size when considering the size of most AP programs. Interviews with more students would provide deeper reinforcement of the themes outlined in this study, but might also help to identify others not expressed by this group.

The findings of this study to showed that the students are interacting with the material online. This, however, does not prove that they are interacting with the material *more than* in a traditional class. The data only shows that they are working with the material. Without a control group with which to compare instructional time, it is difficult to confirm that more time was spent. Students felt that they were spending more time than they normally would, but there was no way to have a direct comparison. Designing a study with a control group would help to determine if blended learning is actually increasing instructional time.

Finally, it is recommended that a similar study be conducted using a different demographic. This study focused on students at the AP level, but studying the experiences of students in a regular level course might produce completely different themes. These students may focus on very different areas of blended learning. These students may have very different experiences with a blended course. Many of the *regular* level students at the school in this study come from very different socioeconomic levels when compared to the AP students. This difference may also impact their views on blended learning, as they may not have the same level of technology or access as the AP students.

Conclusion

This chapter presented the conclusions drawn from this study as framed by the Model of

School Learning and a model of blended learning. This chapter proposed an enhanced blended

learning framework, building upon these earlier models. Suggestions to school administrators,

district leaders, and teachers were articulated in order to implement a blended learning initiative.

Suggestions for future research were proposed as well.

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APPENDICES

Appendix 1 – Interview Protocol

Introductory Questions

1. What grade are you currently in?

2. Do you know what is meant by the term Blended Learning?

    a. Follow up/Probe

        i. Could you give me your definition of what blended learning is

        ii. Do any of your teachers use Moodle in the classroom?

3. How many blended courses do you have this year?

    a. Follow up/Probe

        i. How many blended courses have you had so far?

4. Which of your classes are blended learning?

    a. Follow up/Probe

        i. Can you tell me why you think your other classes don't use blended

            instruction

Research Specific Question

1. What do you like the most about blended learning classes?

    a. Follow-up/Probe

        i. Why are those factors important to you?

2. What do you like the least about blended learning classes?

    a. Follow up/Probe

        i. Why are those factors issues for you?

3. Do you prefer one of the two instructional models (face-to-face or blended) over the other?

   a. Follow up/Probe

      i. Why do you think that is?

4. Tell me about some of the ways your teachers use blended learning in the classroom?

   a. Follow up/Probe

      i. Can you cite some specific examples of these?

5. How does your teacher's implementation of blended learning support your learning?

   a. Follow up/Probe

      i. Can you cite some specific examples of what your teachers are doing

6. What challenges or obstacles have you encountered in a blended learning class?

   a. Follow up/Probe

      i. Can you cite some specific instances of these obstacles?

7. In your experience, how does your use of time in this course compare with other courses?

   a. Follow up/Probe

      i. Why do you think that is?

8. What is your impression of your overall success in this course?

   a. Follow up/Probe

      i. Why do you think that is?

      ii. How has blended learning impacted your success in the course?

9. How does your teacher incorporate social media (Facebook/Twitter) as part of the course?

   a. Follow up/Probe

        i.   Do you feel that this supports your learning in a positive way?

10. From your perspective, how has the communication with your teacher been in this class compared to others?

    a.   Follow up/Probe

        i.   How do you feel this has impacted your experience in the course?

11. Do you believe that having a blended learning course is helpful to you in your future (college/work)?

    a.   Follow up/Probe

        i.   Why do you believe that to be the case?

Appendix 2 – Parental Consent Form

Parental Consent Form

I give consent for my child, _____ to have

their data analyzed and collected in the research project entitled *Perceptions of Time: Blended*

learning, Instructional Time and Student Perceptions which is being conducted by Mr. Daniel A.

Gagnon. I understand that this participation is voluntary and that I or my child may withdraw

consent at anytime without penalty.

The following points have been explained to me and my child:

1. The reason for the research is to determine the perceptions of students in a blended

   instruction Advanced Placement course.

2. The procedures are as follows: Students in the AP Macroeconomics course will be

   surveyed to ascertain their perceptions of a blended learning course.

3. Throughout the course of the study, participants will be asked to complete interviews at

   the beginning, middle, and at the end of the study. This data will be used to measure

   the potential impact of blended instruction in the classroom and student perceptions.

4. The interview protocol will be conducted at a time and place convenient for participants.

   Participants will be given pseudonyms and all data will be confidential.

5. As a participant in this research, your child may experience the following benefits; increased exposure to the learning material, an increased knowledge of the content being delivered, and experiences using an online interface much like their potential university may use.

6. As part of this research, audio recordings of the interviews will be created. Upon completion of the research, all copies of these recordings will be destroyed.

7. The discomforts or stresses that may be faced during this research are: Students may experience some stress due to internet outages at home, lack of high speed internet, or due to their lack of technological skills.

8. Participation entails the following risks: Students who lack the technological skills or technology at home may feel that they are not able to completely participate in the blended instruction.

9. The results of this participation will be confidential and will not be released in any individually identifiable form without the prior consent of the participant unless required by law.

10. Inclusion criteria for participation: Students enrolled in Advanced Placement

Macroeconomics for the Spring 2014 semester will participate in the study.

11. All students enrolled in Advanced Placement Macroeconomics will receive blended

instruction. Your consent will allow the researcher to collect data on your child for the

purposes of this study. If you choose not to consent, your child will still receive blended

instruction, but no data will be collected on them.

12. Research at Kennesaw State University that involves human participants is carried out

under the oversight of an Institutional Review Board. Questions or problems regarding

these activities should be addressed to the Institutional Review Board, Kennesaw State

University, 1000 Chastain Road, #0112, Kennesaw, GA 30144-5591, (678) 797-2268.

13. You may contact the researcher, Daniel A. Gagnon via email at

dgagnon1@kennesaw.edu or by phone at 404-593-0962 with any questions or concerns

you may have regarding your child's participation in this study.

_____ I Agree to all my students' data to be used for research purposes

_____ I DO NOT Agree to allow my students' data to be used for research purposes

Signature: _____

Date: _____

Appendix 3 - Student Assent Form

Study Title: Perceptions of Time: Blended Learning, Instructional Time, and Student

Perceptions

Researchers: *Mr. Daniel A. Gagnon*

My name is *Mr. Daniel A. Gagnon*. I am from Kennesaw State University. I am inviting you

to take part in a research study. Your parent(s) know we are talking with you about the study,

but it is up to you to decide if you want to be in the study. This form will tell you about the

study to help you decide whether or not you want to take part in it.

Why is this study being done?

The purpose of the study is to help us learn about the potential impact that blended instruction

may have on student performance. You are being asked to take part because you are enrolled

in Advanced Placement Macroeconomics. However, if you assent to this study, data will be

collected and analyzed regarding test scores and survey information.

What am I being asked to do?

If you decide to be in the study, we will ask you to continue to do the work required for the

class as articulated in the syllabus. However, as part of the study you will be asked to interact

with your teacher and peers online outside of class.

What are the benefits to me for taking part in the study?

Potential benefits may include; increased exposure to the learning material, an increased knowledge of the content being delivered, and experience using an online interface much like your potential university may use.

Are there any risks to me if I am in this study?

The potential risks of taking part in this study are: Potential stress caused due to internet outages and due to the lack of high speed internet access at home. You may also feel some stress if this is the first time you have ever completed assignments or interacted with your peers in an academic setting online.

Will my information be kept private?

The data for this study will be kept confidential. No identifying information will be kept on you as a participant of the study. The data for this study will be kept for three years.

Are there any costs or payments for being in this study?

There will be no costs to you for taking part in this study. You will not receive money or any other form of compensation for taking part in this study.

What are my rights as a research study volunteer?

Your participation in this research study is completely voluntary. You do not have to be a

part of this study if you don't want to. There will be no penalty to you if you choose not to

take part and no one will be upset or angry at you. You may choose not to answer any

questions you don't want to answer, and you can change your mind and not be in the study

at any time.

Who can I talk to if I have questions?

If you have questions at any time, you can ask the researchers and you can talk to your

parent about the study. We will give you a copy of this form to keep. You may contact me

by email at dgagnon1@kennesaw.edu or by phone at 404-593-0962

The Kennesaw State University Institutional Review Board has reviewed this study to make

sure that the rights and safety of people who take part in the study are protected. If you have

questions about your rights in the study, or you are unhappy about something that happens to

you in the study, you can contact them at (678) 797-2268 or irb@kennesaw.edu.

Research at Kennesaw State University that involves human participants is carried out under

the oversight of an Institutional Review Board. Questions or problems regarding these

activities should be addressed to the Institutional Review Board, Kennesaw State University,

1000 Chastain Road,

#0112, Kennesaw, GA 30144-5591, (678) 797-2268.

What does my signature on this consent form mean?

Your signature on this form means that:

- You understand the information given to you in this form

- You have been able to ask the researcher questions and state any concerns

- The researcher has answered your questions and concerns

- You believe you understand the research study and the potential benefits and risks

  that are involved.

Statement of Consent

_____ I assent to allow my data be used for research purposes.

_____ I DO NOT to allow my data be used for research purposes.

_____   _____

Signature of Participant   Date

_____

Printed Name of Participant

Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect.

I certify that when this person signs this form, to the best of my knowledge, he or she

understands the purpose, procedures, potential benefits, and potential risks of participation.

I also certify that he or she:

- Speaks the language used to explain this research

- Reads well enough to understand this form or, if not, this person is able to

    hear and understand when the form is read to him or her

- Does not have any problems that could make it hard to understand what it means to take

    part in this research.

_____

Name of Parent or Guardian who gave consent for child to participate

_____   _____

Signature of Person Obtaining Consent   Date

Appendix 4- Academic Transcript Example

High School Transcript Definition List - All Records

Year	Grade	Course Desc	1st Qtr	2nd Qtr
2010	08	Hon Accelerated Math 1A		
2010	08	Hon Accelerated Math 1B		
2010	08	Physical Science A		
2010	08	Physical Science B		
2010	08	Spanish 1A		
2010	08	Spanish 1B		
2011	09	Hon 9th Grade Lit/Comp A	83	92
2011	09	Hon 9th Grade Lit/Comp B		
2011	09	Hon Biology 1A	95	95
2011	09	Hon Biology 1B		
2011	09	Hon Accelerated Math 2A	92	95
2011	09	Hon Accelerated Math 2B		
2011	09	Aero Sci: Avi His/Lead 1A	96	96
2011	09	Aero Sci: Avi His/Lead 1B		
2011	09	Aero Sci: Corps/Lead 4A		

2011	09	AP Human Geography	90	90
2011	09	AP Human Geography B		
2011	09	Spanish 2A	98	97
2011	09	Spanish 2B		
2012	10	Hon 10th Grade Lit/Comp A	87	90
2012	10	Honors Tenth Grade Literature/Composition B		
2012	10	AP Statistics A	85	84
2012	10	AP Statistics B		
2012	10	Aero Sci: Sci Flt/Lead 2A	97	99
2012	10	Aerospace: Science of Flight/Leadership 2B		
2012	10	Study Skills/TAA 1B		
2012	10	Hon Chemistry 1A	95	94
2012	10	Honors Chemistry 1B		
2012	10	AP World History A	88	88
2012	10	AP World History B		
2012	10	Hon Spanish 3A	91	93
2012	10	Honors Spanish 3B		

2013	11	Honors American Literature/Composition A	87	89
2013	11	Honors American Literature/Composition B		
2013	11	Honors Accelerated GPS Pre-Calculus A	92	76
2013	11	Honors Accelerated GPS Pre-Calculus B		
2013	11	Aerospace Science: Cadet Corps Mgmt/Leadership 4A	88	78
2013	11	Aerospace Science: Cadet Corps Mgmt/Leadership 4B		
2013	11	Study Skills/TAA 2		
2013	11	Honors Physics 1A	91	94
2013	11	Honors Physics 1B		
2013	11	AP United States History A	91	90
2013	11	AP United States History B		
2013	11	AP Spanish/Language A	90	91
2013	11	AP Spanish/Language B		
2014	12	Writer's Workshop A	100	100
2014	12	Writer's Workshop B		
2014	12	AP Language/Composition A	95	89
2014	12	AP Language/Composition B		

2014	12	AP Environmental Science A	88	90
2014	12	AP Environmental Science B		
2014	12	AP Calculus AB A	84	90
2014	12	AP Calculus AB B		
2014	12	Aerospace Science: Hon Ground School/Leadership 4A		
2014	12	Aerospace Science: Hon Ground School/Leadership	97	98
2014	12	AP Government/Politics: United States	93	92
2014	12	AP Macroeconomics		

Appendix 5-Individual AP Score Results

AP Subject Score Roster (2014)

This roster lists all students and their AP scores for each subject, along with a table summarizing the total numbers of

each AP score (1 to 5) and average score in that subject. If the school designated

class sections on students' answer sheets, the data displayed are specific to a particular

section of the course.

Berlin High School (110589) - Macroeconomics, All Students

Section Summary								Subject Summary	
Score	5	4	3	2	1	Total Students	Average Score	Total Students	Average Score
Total Students	0	10	2	6	3	21	2.905	21	2.905

Student Name	Score
Student	2
Tim-Traditional AP Student	4
Student	4
Student	1
Student	2
Student	4
Student	1
Student	4
Student	4
Student	2
Student	3
Student	3
Ava-Traditional AP Student	4
Student	4
Student	4
Student	1
Student	2
Student	4

Student	2
Leo-Non-Traditional AP Student	2
Roger-Traditional AP Student	4

Appendix 6-School Instructional Planning Report

Print / Download Options

AP Instructional Planning Report (2014)

✓ Data Updated Aug 12, 2014

Berlin High School (110589) - Macroeconomics

Performance on Multiple-Choice Section (Maximum Possible Score = 60)

Content Area	Number of Questions	Global Mean	Group Mean	Number of Students in Your Group			
				Lowest Fourth	Second Fourth	Third Fourth	Highest Fourth
BASIC ECONOMIC CONCEPTS	6	5	5	0	6	8	7
ECONOMIC MEASUREMENTS	9	5	5	2	5	8	6
FINANCIAL SECTOR	11	7	5	9	7	4	1
INFLATION\ UNEMPLOYMENT & POLICY	15	9	9	2	7	9	3
NATIONAL INCOME DETERMINATION	8	5	6	3	3	9	6
OPEN ECONOMY	6	4	5	3	2	0	16
Multiple-Choice Summary		39	39	4	6	10	1

Performance on Free-Response Section (Maximum Possible Score = 30)

Question/Problem	Max Possible Score	Global Mean	Group Mean	Number of Students in Your Group			
				Lowest Fourth	Second Fourth	Third Fourth	Highest Fourth
STABILIZATION POLICIES & AD-AS MODEL	11	5.5	6.0	3	6	4	8
FINANCIAL SECTOR	6	3.1	3.2	3	3	11	4
OPEN ECONOMY	5	2.6	2.9	4	6	2	9
Free-Response Summary		15.3	16.5	5	5	4	7

Indicates that the distribution is not displayed because more than half of the total AP global group earned the same score.

** Indicates that the distribution is not displayed because there were fewer than five questions in the category.

⬦ CollegeBoard

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