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The Perceptions of Students on a Cooperative, Gamebased Learning Latin Curriculum: An Action Research Study

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THE PERCEPTIONS OF STUDENTS ON A COOPERATIVE, GAME-BASED LEARNING LATIN CURRICULUM: AN ACTION RESEARCH STUDY

by

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DEDICATION

This work is dedicated to my daughter, Emma Grace Blackburn. You grew from a little girl to a young lady as I wrote this work and completed the doctoral program. I hope you always know how proud I am of you, and I can't wait to see you do great things. Whether you become a teacher, a doctor, or a professional wrestler trained by Triple H (your current goal at 8 years old), I will always be there for you. I love you always, EG.

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ABSTRACT

This action research study describes the impact of *Operation LAPIS,* a cooperative game-based Latin 1 curriculum, upon student perceptions in a large suburban high school in South Carolina. The game served as an introduction to Latin grammar, vocabulary, and the daily life of a Roman teenager for 15 Latin 1 students who participated in the study. Syntax, vocabulary acquisition, and cultural studies are essential standards-based elements of learning Latin. Students were surveyed regarding their opinions on the game's approach to grammar, vocabulary, Roman daily life, and game-based learning in general. These surveys produced a quantitative data set that allowed the researcher to measure changes in student attitudes over time. The qualitative data set was comprised of semi-structured interviews with student-participants, students' weekly journals during the data-collection timeframe, and systematic observation of the classroom in which students played *Operation LAPIS*. Findings were organized into themes of the affective impact of *Operation LAPIS* based on qualitative and quantitative data. All themes were then examined by gender to determine whether the game impacted males and females differently. The study found that students were in favor of the idea of game-based cooperative learning at the beginning of their semester. As the semester progressed, students still enjoyed *Operation LAPIS*, student satisfaction with game-based learning increased while satisfaction with traditional educational methods decreased. The study also found that female students enjoyed the game, largely due to the collaborative/social aspect of the game. Boys occasionally mentioned a desire for competition, but they

enjoyed the elements of the game without a competitive aspect. *Operation LAPIS* had a positive impact on affective education for the students in this study. Students expressed a desire to continue the use of *Operation LAPIS* in future years. Further study will be needed to determine the impact of the game on Latin interpretive proficiency.

Keywords: Latin, game-based learning, technology, experiential learning, gender, personal computing devices

TABLE OF CONTENTS

CHAPTER 1

RESEARCH OVERVIEW

Introduction

In August 2011, all high school teachers in a large suburban school district in South Carolina were issued iPads and were instructed to use these personal computing devices (PCDs) as tools to augment instruction and increase student engagement in the classroom. District and building administrators emphasized the need to utilize the PCDs as more than a replacement for the traditional notebook or as a rewarded game after a period of learning. The iPads (the PCDs chosen by the district) were distributed to all high school students in order to help them become independent and self-sufficient "21st century learners." Minimal professional development (one hour per month) was provided to help faculty members learn how to use the devices to meet district expectations. As a result, many faculty members, including the researcher-practitioner of this dissertation in practice (DiP), utilized the iPads as devices for student note-taking or basic research. The term "use of technology for the sake of the use of technology" was often heard in reference to the large number of teachers who were using the iPads in unimaginative ways that did not impact student learning, achievement, and attitudes toward school.

The researcher-practitioner began to consider the possibilities of the iPad in the Latin classroom, specifically in the realm of games. Many teachers, including the researcher-practitioner, were experiencing discipline issues with students due to their desire to play electronic games during class time. This led the researcher-practitioner to

question whether teachers could create a positive emotional factor for all students in a Latin classroom through students' the desire to play games during class time. The Pericles Group developed products that allow students to learn the first two years of Latin grammar and culture though a cooperative, game-based system. According to the Pericles Group, their:

> courses give students the chance to explore learning as a narrative and as a game. When students explore that way their attitudes and behaviors change along with their level of knowledge, and they become active learners, on their own mission to use their learning to make the world a better place ("Our Mission," n.d., para. 1)

Other Latin teachers who used the program with middle school students in the high school's district provided helpful information regarding the content and reliability of *Operation LAPIS* (the name of the product used for beginning Latin students). The district agreed to pay the cost of $10 per student when the study began during the 2016-2017 academic year. The program was a supplemental method of instruction during the study, with primary grammar, vocabulary, and cultural studies information provided by the *Ecce Romani* textbook series.

The researcher-practitioner conducted a literature review concerning game-based learning in the classroom with a focus on second-language acquisition. Four major concepts formed the conceptual framework for the study: constructivism, experiential education, Multiple Intelligences, and the Nine Events of Instruction. Major scholars such as Dewey, Piaget, Vygotsky, and Lewin (as cited in Kolb, 1984a) examined constructivism and experiential education from different viewpoints. According to

Piaget, learners developed and moved through his model via the accommodation of concepts and assimilation of events. Meaning is constructed through a combination of personal experience of the learner and ideas being presented to the learner. Experiential education allows students to learn by applying themselves to an interactive, real-life experience (or a model of a real-life experience). Dewey (1938) encouraged experiential education that allowed for intellectual and social growth of students. The intellectual growth involved constructing personal meaning from the experience (constructivism). The researcher-practitioner found that modern role-playing games could provide virtual experiential education experiences for the 21st century student.

Gardner's Multiple Intelligences theory lists eight different types of intelligences found in today's students: spatial, bodily-kinesthetic, musical, linguistic, logical-mathematical, interpersonal, intrapersonal, and naturalistic ("The Components of MI," n.d.). Gagné (1965) lists Nine Events of Instruction that must happen for learning to occur. Cooperative game-based learning, when implemented intentionally in the classroom, can apply to both of these educational theories. There will be more detailed discussions of constructivism, experientialism, Multiple Intelligences, and the Nine Events of Instruction in the literature review found in Chapter 2 of this work. The literature review will explore the connection of all four theories to cooperative, game-based learning.

Problem of Practice Statement

The high school's district office provided its teachers and students with iPads on a one-to-one basis and expected both groups to use this technology to its greatest effect in the classroom. Little attention, however, was given to training the groups regarding the

3

best educational uses of the iPad. Teachers tend to rely upon methods that have worked

for them in the past and utilize the iPad as a secondary tool during instruction. This could

result in some students not achieving the highest possible levels of success in the course,

as it restricts the potential of the iPad as an academic tool, thus limiting the value that

students may receive from the use of the iPad. This also impacts the positive affective

environment in the classroom, as the use of technology for instruction and learning could

impact that students emotionally. This study, therefore, examined the impact of game-

based learning on the attitudes of students toward learning Latin. Did the introduction of

game-based instruction via the iPad create a more positive affective environment for

students in this Latin classroom? The researcher also disaggregated data by gender to

ensure female students benefitted from this instruction (the theme of social justice will be

discussed later in this chapter and in Chapter 2).

This investigation was feasible for a number of reasons. First of all, the

researcher-practitioner is the only Latin teacher at the high school that serves as the

setting for the research. Instruction outside of *Operation LAPIS*, therefore, was

consistent for each student. Secondly, the research was possible because all students had

access to technology within the classroom. If students did not have their personal

computing devices on a given day, the researcher was able to supply them with a device

for the instructional period. Finally, the district office stated that *Operation LAPIS* was

an acceptable piece of instructional technology and agreed to fund the project for all

students.

This study also provided insight into a community issue involving personal

computing devices. There was (and is) controversy among parents and stakeholders

regarding the value of personal computing devices. Many in the community felt that the devices do not serve a legitimate academic purpose in the classroom and are more of a distraction than an academic tool. The data provided by this study may be used to demonstrate the value of the devices (in an emotional sense) when they are used in an effective academic manner.

Research Questions and Objectives

The primary research question of this study was: to what extent did game-based learning impact the affective environment of a Latin 1 classroom at the researcher-practitioner's school? The researcher-practitioner asked participants to complete a short Likert scale (Appendix A) three times (beginning, middle, and end) during the study to measure the affective impact in a quantitative sense. The researcher used qualitative research methods such as systematic observations, student journals, and semi-structured exit interviews to polyangulate the quantitative findings from the Likert scale. Mertler (2017) explained that triangulation doesn't necessarily mean the use of three data sources and encouraged practitioner-researchers conducting action research to use multiple sources to polyangulate the data collected from the sources. "Polyangulation is the process of relating or intergating two or more sources of data to establish their quality and accuracy" (p. 42).

The first research objective was to determine the change in an affective classroom environment over the course of the study by analyzing student responses to the questions on the Likert scale, as well as the changes to those answers. The second research objective was to code, list, and analyze students' feelings and opinions regarding game-based learning to determine whether it could have a positive affective impact on this

group of students. The third research objective was to examine all collected quantitative and qualitative data through the lens of gender in order to ensure that any gains in affective environment were present for all genders. The third objective will be discussed further when the social justice aspect of the dissertation is introduced.

Purpose of the Study

The purpose of this action research study was to explore the affective impact of cooperative game-based learning via iPad on 15 students who studied Latin 1 at a large southern suburban high school. The study examined the emotional/affective impact of a game, *Operation LAPIS*, only on this group of students within this school during the study period. At the beginning, middle, and end of the study period, subjects completed a Likert scale (Appendix A) that allowed the researcher-practitioner to place a quantitative numeric value on the perceived affective impact. The researcher-practitioner then utilized the qualitative research tools of systematic classroom observations (Appendix B), student journal entries, and semi-structured interviews with students (Appendix C) to polyangulate findings from the Likert scale.

The affective domain is critical because it relates to the manner in which students internalize and value material that they learn. The five stages of affective taxonomy are: receiving, responding, valuing, organization, and characterization. As learners advance through the taxonomy, they consider, evaluate, and judge the material they are learning. It becomes a part of their thought process. Kirk (n.d.) states "there is significant value in realizing the potential to increase student learning by tapping into the affective domain. Similarly, students may experience affective roadblocks to learning that can neither be recognized nor solved when using a purely cognitive approach" (para. 8). It is important,

therefore, to measure the affective impact of a teaching tool because a greater affective impact may result in deeper student engagement with the material.

Theoretical Base and Conceptual Framework

The theoretical base of this action research study was grounded in the works of Dewey, Piaget, Vygotsky, Lewin (as cited in Kolb, 1984a), Gardner (n.d.), and Gagné (1965), all of whom conducted research related to how students learn. These were discussed earlier in this chapter and will be examined further in Chapter 2. The researcher-practitioner wondered how the work of Krathwohl, Bloom, and Masia (1964) on the affective domain would fit with experiential learning, constructivism, Multiple Intelligences, and the Nine Events of Instruction. The affective domain of learning involves having students accept and synthesize knowledge because they value the learning experience on an emotional level. The researcher-practitioner strove to determine if a game-based cooperative curriculum based on the theories of Dewey, Piaget, Vygotsky, Lewin, Gardner, and Gagné would have a positive affective impact on this group of students.

The conceptual framework for this study was based on how the ideas described in the previous paragraph have applied to the teacher-practitioner's career to this point. The teacher-practitioner is a 16-year classroom veteran who taught all levels of Latin to a variety of age groups in middle schools, high schools, and colleges. Because students are not required to take Latin, the researcher-practitioner always believed that it is necessary to relate to students on an emotional level. This builds student-teacher relationships that result in better learning experiences. A student who is engaged in a course through student-teacher interaction is often motivated to do his/her best work in the course. This

is the essence of the affective domain (Krathwohl, Bloom, & Masia, 1964). Students learn Latin, maintain a positive attitude toward the language, and the Latin program maintains a large number of students. In many regards, the researcher-practitioner applied the work of Bloom and Krathwohl before beginning work on the DiP.

The researcher-practitioner next noticed that the iPad is a fun, technological toy and wondered if the iPad could become a critical part of the affective classroom environment. This led the researcher-practitioner to review theories involving experiential learning, socialization during learning, Multiple Intelligences, and the Nine Events of Instruction. Finally, the researcher-practitioner began to examine cases in which games (both cooperative and competitive) were used in classrooms around the world with results reported in journals. All of this information is discussed in more detail in the next chapter.

Based on previous experience in the classroom, the researcher-practitioner hypothesized that *Operation LAPIS* would result in a positive affective classroom impact. Students, especially males, tend to enjoy playing games in class. The researcher-practitioner had noticed in the past that many female students often quit during competitive games such as Certamen (Latin Quiz Bowl). Research on females and game-based learning may be found in Chapter 2. By implementing a cooperative game such as *Operation LAPIS*, the researcher-practitioner hoped that this issue would not arise. Studies indicate that females are more comfortable playing games with a cooperative and social aspect. These will be discussed in Chapter 2. In simple terms, the researcher-practitioner speculated that students would enjoy playing *Operation LAPIS*, and this would increase their enjoyment of Latin and, thus, increase the amount that they learned

in the Latin classroom. The game-based curriculum would help students advance in the affective domain, thus also promoting their advancement in the cognitive domain.

Action Research Methodology

     Action research philosophy.

     Action research is "a disciplined process of inquiry conducted by and for those taking the action. The primary reason for engaging in action research is to assist the 'actor' in improving and/or refining his or her actions" (Sagor, 2000 p. 3). According to Sagor, there are three major purposes for action research: building the reflective practitioner, making progress on schoolwide priorities, and building professional cultures. Schoolwide priorities have already been addressed in regard to this study in terms of the problem of practice. The concepts of building the reflective practitioner and building professional cultures are related. A reflective practitioner is a stronger teacher, as he/she assesses and reassesses the educational process continually. A building of reflective practitioners results in the building of professional cultures. Faculty members may be working on a number of different projects, but they will come together to collaborate when they have something to share that is meaningful for others or helpful to the research of others.

     Research questions.

     The primary research question of this study was: to what extent did game-based learning impact the affective environment of a Latin 1 classroom at the researcher-practitioner's school? The secondary question, addressing social justice themes, asked: to what extent did game-based learning impact the affective environment for female students of a Latin 1 classroom at the researcher-practitioner's school? Both questions

were answered with quantitative and qualitative data that were polyangulated to determine if the findings were consistent.

Participant selection.

Participants were selected based on their enrollment in a Latin 1 class at the researcher-practitioner's school during the Spring 2017 semester. All 16 class members agreed to be involved in the study (Appendix D) and their parents/guardians also provided permission (Appendix E). These documents may be viewed upon request with all identifying information redacted in the interest of confidentiality. Only 15 students completed the study (see Chapter 4).

Research site.

The research site was the researcher-practitioner's employing school. It is a large suburban school in the Southern United States. The high school's district was very supportive of World Language study and encouraged the use of technology by providing an iPad to every student and teacher in the school. The school is located in a politically conservative section of the state.

Data sources.

The researcher-practitioner collected information from four types of data sources over the course of the study: a Likert scale (Appendix A), a classroom observation form (Appendix B), a semi-structured interview (Appendix C), and weekly student journals.

Data collection strategy.

The researcher-practitioner wanted to maintain a balance of data from all participants in the study. In order to accomplish this, a schedule was developed for each of the data sources. The Likert scale was administered to all students on the first day of

the study, after the fourth week of the study, and at the conclusion of the study (nine weeks). If students were absent, they completed the Likert scale the day they returned to class.

There were six groups of students in the room based on the game characters they chose. Over the course of a two-week span, the researcher-practitioner would observe each group on a Monday-Wednesday-Friday schedule. During the third week, females were the focus of observation (these females would also be observed as part of their larger group). This cycle was repeated three times over the course of the study. During the final week of the study, semi-structured interviews were conducted along with classroom observations. Journals were read each weekend after being collected in *Operation LAPIS*' learning management system, Schoology.

Research findings.

The major research finding was that collaborative, game-based learning did have a positive impact on the researcher-practitioner's affective classroom environment. Tables containing the data from three administrations of the Likert scale may be found in Chapter 4 of this DiP. In summary, the data indicates that students thought they would enjoy game-based collaborative learning (based on the administration given the first day of the study), and they actually enjoyed it more than they thought they would (based on the higher means for the second and third administrations). This information is polyangulated from data collected utilizing classroom observations and concluding semi-structured interviews. Only two of the students (one male and one female) did not enjoy working with *Operation LAPIS*. Their observations and comments are addressed in Chapters 4 and 5. The weakest source of polyangulation was found in student journals,

and this will be discussed further in Chapters 4 and 5. The data also indicated that women enjoyed the game-based curriculum slightly more than men, satisfying the social justice research question.

Key Words/Glossary

- Constructivism: The constructivist theory of education states that the learner constructs all meaning as he or she interacts with the world intellectually and socially. According to Hein (1991), this means that teachers and instructors must focus more on the learner because the learner constructs the lesson. The learner constructs meaning through personal experience. Three major theorists who subscribe to concept of constructivism are Dewey, Piaget, and Vygotsky. A game-based learning curriculum allows each student to construct his/her path in the game.

- Cooperative Learning: According to Felder and Brent (n.d.), cooperative learning may be defined as "an approach to groupwork that minimizes the occurrence of those unpleasant situations and maximizes the learning and satisfaction that result from working on a high-performance team" (Felder & Brent, n.d., para. 2). Students must work in teams to complete a goal that contains the following elements: positive interdependence, individual accountability, face-to-face interaction, collaborative skills, and group processing.

- Educational Technology: According to the Association for Educational Communications and Technology (AECT) (2004), the official definition of educational technology is "the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate

technological processes and resources" (p. 1). Within the definition, the term technological may refer either to resources or processes. For the purpose of this study, the focus will be on resources (iPads, software, apps, etc.).

- Experiential Learning: Major educational theorists such as Dewey, Piaget, Vygotsky, and Lewin are proponents of experiential learning. The University of Colorado's Experiential Learning Center defines the concept as "a process through which students develop knowledge, skills, and values from direct experiences outside a traditional academic setting" ("What is experiential learning?" n.d., para. 1). Students should reflect, take initiative, engage intellectually, and learn from mistakes and successes when engaging in experiential learning. A game may be considered an experiential learning device as it places the student in a virtual reality (such as Ancient Rome, in the case of *Operation LAPIS*).

- Game Based Learning: Commonly abbreviated as GBL, game based learning is "a type of gameplay that has defined learning outcomes" (EdTech Review, 2013, para. 1). Games should attempt to balance entertainment with subject matter. Teachers should expand upon material learned in the game while in the classroom setting. Effective GBL teaches students behaviors and thought processes that they may use successfully in the classroom.

- Motivation: Korb (2012) lists six factors that motivate students to learn according to contemporary research. They are student control of learning, relevance to student use and teacher's genuine interest, teacher's enthusiasm, quick feedback and assignment return, instructional variety, and encouragement (p. 7-8). This

study examined to what degree the use of game based learning motivates students and moves them up the affective domain.

- Multiple Intelligences: Dr. Howard Gardner of the Harvard Graduate School of Education proposed the psychological theory of Multiple Intelligences. Gardner adapted his theory, and there are now eight major Multiple Intelligences (see Introduction). Individuals may demonstrate proficiency in a number of Multiple Intelligences. Gardner did not develop a test for Multiple Intelligences, but Branton Shearer utilizes a test known as the *MIDAS* ("What MI am I?," n.d.).

- Nine Events of Instruction: Gagné (1965)developed this theory that lists nine events necessary for learning. Please see the Literature Review that lists the nine events. Both the Nine Events of Instruction and Theory of Multiple Intelligences support game based learning, according to Becker (2005), as they allow and encourage students to learn in a variety of ways.

- Personal Computing Device: A personal computing device is a piece of technology designed for use by a single individual at any one time. In the common vernacular, these are handheld devices such as smartphones and tablet computers. The study used the iPad, issued to all students through the selected school's district, as the personal computing device.

- Second Language Acquisition: Second language acquisition is "the name of the theory of the process by which we acquire or pick up-a second language" ("Second language acquisition," 2008, para. 1). Krashen is one of the top theorists on modern (spoken) languages acquisition. Because Latin is traditionally taught as a "dead" language, there is little research on best practices

for second language acquisition as it relates to Latin. The study hopes to test the merits of game based (experiential) learning.

- Serious Game: "Serious games are games designed for a purpose beyond pure entertainment" ("Definition of serious games," n.d., para. 1). Educational games are considered serious games because they have student learning and achievement as primary goals. Many serious games maintain high-quality graphics and sound in order to entice learners to play. The effect of this is questionable (see Chapter 2).

Potential Weaknesses

The first weakness of this study lies in the limitation of action research. The researcher-practitioner is concerned only with the group of students taking part in this study. There is no claim that the results may be replicated in another time or place with another group of students. The methodology, however, may be replicated and adapted for future study.

Another potential weakness in this study is the presence of the researcher-practitioner as the teacher of the course involved in the study. There is the possibility that students would interpret criticism of the game as criticism of the teacher and his/her teaching methods. The researcher-practitioner attempted to combat this by emphasizing the need for honesty in all surveys, interviews, and conversations, describing the action research as an attempt to make the class better (with no existing bias toward whether it would or not).

A final potential weakness is the bias of the teacher/researcher-practitioner. There is a desire, when one chooses a topic such as this, to hope that it works and is effective

for one's students. In order to neutralize this bias, the researcher-practitioner provided all directions and feedback for the game electronically. Students were expected to log on at the beginning of the block and to play for 15-20 minutes while the researcher-practitioner conducted observations. The teacher's lack of commentary/participation in *Operation LAPIS* could have actually had the opposite effect, creating a student bias against the game. If this is true, however, the students enjoyed the game enough to indicate that it was creating a positive affective environment.

Significance of the Study

This study is significant in a professional sense as it helped the researcher-practitioner create a more positive affective environment for his students through the use of a technological tool. This means that the students and the teacher utilized the personal computing device for quality educational purposes, a major part of the problem of practice. In addition, students enjoyed participating in the class and had positive feelings toward the class, resulting in a positive affective classroom environment as defined by Krathwohl, Bloom, and Masia (1964).

The study also has significance in terms of social justice, specifically relating to females. As many studies examined in Chapter 2 indicate, games have been, at best, a mixture of good and bad for females. Many of the issues, according to researchers, stem from an aversion to competition with males and other females in the mixed classroom. Studies also indicate that females perform well when games are collaborative and/or social in nature. The researcher-practitioner in this study disaggregated all data in terms of identified gender to ensure that the game was a positive (or, at least, a neutral) experience for students. Based on the literature and the researcher-practitioner's previous

experience with competitive games, a non-collaborative game may have split the classroom in terms of affective impact.

Conclusion

This action research study examined the impact of a collaborative game (*Operation LAPIS*) on the affective environment in a Latin 1 classroom in the suburban Southern United States. Data was collected via Likert scale, classroom observations, semi-structured interviews, and personal journals. The researcher polyangulated the data and found that the game did have a positive affective impact. Chapter 2 of this DiP will examine the literature surrounding the theoretical base and conceptual framework of the study. It will conclude with a description of a number of studies regarding game-based learning in the classroom. Chapter 3 will outline the methodology of the study, while Chapter 4 will discuss the findings and implications from the study. Chapter 5 will provide an action plan based on the findings and implications from the study so that cyclical research on the topic may continue in the future.

CHAPTER 2

LITERATURE REVIEW

Introduction

The literature review for this action research study is organized around a number of historical and modern theories. Game-based learning is a modern extension of the theory of experientialism derived from scholars such as Dewey, Piaget, Vygotsky, and Lewin. The cooperative aspects of game-based learning allow students to construct their own meanings as they grapple with the material, leading to the theory of constructivism (also pioneered by Dewey, Piaget, Vygotsky, and Lewin). The review will then examine game-based learning in terms of two modern theories: Gardner's Multiple Intelligences and Gagné's Nine Events of Instruction. As these theories are discussed, it will become apparent that modern educational video games can support the ideas of Gardner and Gagné. The literature review also contains a number of studies (qualitative, quantitative, and/or action research) that examine the impact of game-based learning on students. When completing the literature review, the researcher-practitioner focused on these scholars, theories, and themes. Case studies were limited to the past 20 years (due to technological advances), although an exception was made for Brom, Preuss, and Clement (2011) due to their long-term studies involving game-based learning.

Purpose of Literature Review

According to Boote and Beile (2005), "a substantive, thorough, sophisticated literature review is a precondition for doing substantive, thorough, sophisticated

research (p. 3). A researcher should know what has been done in his/her field and the

methods utilized before beginning a new research project.

Hart (1998) lists 11 purposes for a thorough literature review:

> 1. distinguishing what has been done from what needs to be done;
>
> 2. discovering important variables relevant to the topic;
>
> 3. synthesizing and gaining a new perspective;
>
> 4. identifying relationships between ideas and practices;
>
> 5. establishing the context of the topic or problem;
>
> 6. rationalizing the significance of the problem;
>
> 7. enhancing and acquiring the subject vocabulary;
>
> 8. understanding the structure of the subject;
>
> 9. relating ideas and theory to applications;
>
> 10. identifying the main methodologies and research techniques that have been
> used;
>
> 11. placing the research in a historical context to show familiarity with state-of-
> the-art developments. (p. 27)

The literature review, therefore, is a critical component for researchers examining

the state of their research in the field. It may result in a revision of a research question,

research problem, or methodology as the researcher examines and analyzes work

completed in the past. The review may also provide the researcher with ideas to augment

the study.

There is also a practical aspect to the completion of a literature review. Butin

(2010) states "the literature review is, simply put, your chance to make sure that you are

not wasting your time" (p. 63).   If one's topic has been researched repeatedly, there may

be little value in repeating it (unless there is a new methodology to use).   On the contrary,

one may find gaps that will provide motivation that the research is new, relevant, and

necessary.   Finally, the literature review may serve as "an inspiration (and caution) for

your own research" (Butin, 2010, p. 65).   Many articles will include information on

breakthroughs and frustrations that may support or encourage a researcher producing a

dissertation. One of the hallmarks of action research is the improvement of one's own

pedagogy.   A responsible action researcher will desire to know the work of other scholars

on his/her topic.

Theoretical Base

This action research study based its historical perspective in the ideas of

experiential education and constructivism derived from scholars such as Dewey, Piaget,

Vygotsky, and Lewin. In his seminal work *Experience and Education* (1938), Dewey

called for experiential education as part of his progressive model of education.   He was

concerned about the type of experiences students were receiving via the traditional

educational model, stating that many of them were having a negative effect on students.

One of the main characteristics of a good experiential education, according to

Dewey (1938), is the ability of a student to grow during the lesson. Dewey (1938) used

the term *continuity* to describe this growth. "Growth, or growing as developing, not only

physically, but intellectually and morally, is one exemplification of the principle of

continuity (Dewey, 1938, p. 36). Continuity can be positive or negative, based on the

experience. Dewey (1938) notes the continuity of a spoiled child versus an experience

that raises intellectual curiosity in a child.

Dewey (1938) stated that "I have taken for granted the soundness of the principle that education, in order to accomplish its ends both for the individual learner and for society, must be based upon experience-which is always the actual life-experience of some individual (Dewey, 1938, p. 89). This experientialism is one of the guiding characteristics of game based learning and the study. It is not possible for a student of Latin to have an experience as an Ancient Roman. Through *Operation LAPIS*, however, students had the ability to play as a Roman, thus receiving a virtual experience that used inquiry learning. This allowed students to construct their own knowledge of ancient culture, vocabulary, and grammar through their gameplay. Waddington (2015) supported the concept that Dewey's experiential philosophies can be applied to modern education via video games. Citing a game called *Fate of the World* that asks students to solve a carbon emission crisis coming from China, Waddington (2015) demonstrated that the game provided an experience that a classroom teacher could never replicate. Using video games as virtual experiences also eliminated another problem with experiential education:

> With education through occupations, it is all too easy to shift from a focus on learning about social systems and scientific inquiry to a focus on "learning by doing," or "learning through work," or, in other words, mildly progressive curricula in which much of the scientific and technological content that makes Dewey's curriculum so valuable is lost. Worse yet, it is possible to offer an interpretation of education through occupations that places much of its emphasis on the development of vocational skill. (Waddington, 2015, p. 7)

The experiential education of Dewey (1938) could easily become vocational training. For example, as students learned how a textile mill worked, they could be trained as textile mill workers instead of learning the scientific process behind how things in the mill functioned.

Piaget's Model of Learning and Cognitive Development shares many experiential ideas with Dewey. "For Piaget, the dimensions of experience and concept, reflection, and action form the basic continua for the development of adult thought" (Kolb, 1984b, p. 23). Piaget believed that learners developed and moved through his model through the accommodation of concepts and assimilation of events. Both of these situations require experience and experiential learning. Nothing is absolute in a child's mind because experience affects the child's worldview. The child either accommodates to experience or assimilates to it. The goal of assimilation is play, which is the outcome of a game. Game based learning, specifically in a cooperative, goal-based environment, should result in accommodation as the child learns the game and then assimilation as the child makes the game world its own.

Vygotsky emphasizes the importance of a social aspect to learning (Palincsar, 2005). "Mental functioning of the individual is not simply derived from social interaction; rather, the specific structures and processes revealed by individuals can be traced to their interactions with others" (Palincsar, 2005, p. 290). Learning is a combination of the individual and the social. As learners work together, they acquire new skills, knowledge, and strategies. According to Palincsar (2005), this is especially true when heterogeneous groups work together (i.e. high-achievers with low-achievers).

The social development theory of Vygotsky, therefore, supports cooperative game-based learning.

Lewin's third principle of education seems counterintuitive when it is first read: "Even extensive first-hand experience does not automatically create correct concepts (knowledge)" (as cited in Benne, 1976, p. 34). When stating this, Lewin cited that thousands of years of falling did not lead mankind to discover gravity. He believed that individuals should learn through experimental inquiry that is established to lead the learner to an educational experience. This places a burden on those organizing the experience to develop a lesson that will lead to a valuable piece of knowledge if it is completed correctly. As students worked their way through *Operation LAPIS* and other pieces of gaming software designed for education, it is important to consider Lewin's third principle. Educators, typically, want students to reach a goal or gain a type of specific knowledge. In the case of *Operation LAPIS*, the software is useless unless it guides the students toward knowledge of Roman culture, Latin grammar structures, and Latin vocabulary.

Two other more recent theorists also provide a historical basis for game based cooperative learning are Gagne and Gardner. In 1965, Gagne identified his nine events necessary for learning. They are:

1. Gain attention

2. Inform learners of objectives

3. Stimulate recall of prior learning

4. Present the content

5. Provide "learning guidance"

6. Elicit performance (practice)

7. Provide feedback

8. Assess performance

9. Enhance retention and transfer to the job (Kruse, n.d., p. 1)

Becker (2005) argues that video games naturally fit Gagne's nine events. Games gain the

attention of learners by entering "attract mode," (p. 2) either playing themselves or

providing an enticing introduction. They inform students of the objective and stimulate

recall of prior learning though the backstory of the game and activities completed on

previous levels. The stimulus is provided when the game provides encouragement or a

challenge. It provides learning guidance by guiding the player through the game without

the use of a manual. Games elicit performance when they are played and generate

feedback through scores or advancement of levels. Finally, games teach transferrable

skills as many games are played the same way. In an educational setting, transferability

will be determined by achievement in the classroom.

Gardner currently lists eight intelligences in his theory of Multiple Intelligences

according to *MI Oasis*, Gardner's official site for Multiple Intelligences. They are:

1. Spatial

2. Bodily-Kinesthetic

3. Musical

4. Linguistic

5. Logical-Mathematic

6. Interpersonal

7. Intrapersonal

8. Naturalistic ("The Components of MI," n.d.)

Becker (2005) claimed that video games naturally engage several aspects of Gardner's Multiple Intelligence. Spatial intelligence is emphasized when games provide a three-dimensional environment. Many games also fluctuate between first- and third person viewpoints, which is stimulating for those with spatial intelligence. Becker (2005) argued that games are kinesthetic because they force users to use their hand and fingers in certain patterns to succeed, even though the rest of the users body is likely stationary. Many games use scores or sounds for feedback that would be beneficial for a player with musical intelligence. Linguistic learners (a focus of the study) will enjoy written or spoken portions of the game, perhaps including directions or help menus. The need for strategy in a game appeals to the logical-mathematical and intrapersonal Multiple Intelligence. Interpersonal intelligence could be stimulated through a multiplayer or cooperative game. *Operation LAPIS* seemed to fit many of these descriptions.

There is a rich historical basis for the study. Educational video games are a 21st century form of experiential learning. The theories of experiential proponents such as Dewey, Piaget, Vygotsky, and Lewin are consistent with the goals of modern educational games and, specifically, *Operation LAPIS*. Vygotsky's theory was particularly respected, as students worked with the software in small groups. The study grouped students in heterogeneous manner in order to assist low-achieving students. The study also claimed a basis in the works of Gagne and Gardner, as video games and educational games satisfy several aspects of their theories.

The concept of the affective domain is often attributed to Bloom, as it is included in Bloom's Taxonomy. Krathwohl, however, co-authored Bloom's Taxonomy and is

considered the main developer of the theory of the affective domain. The levels of the affective domain taxonomy are: receives phenomena, responds to phenomena, values, organizes, and internalizes values (Krathwohl, Bloom, & Masia, 1964). Each of these behaviors indicates levels of interest, attention, or concern. These are impacted to a large degree by the students' emotional investment in the course and/or material. In terms of this action research study, the researcher-practitioner theorized that students would like the course more (and, thus, gain more from it academically) if they enjoyed the game-based learning aspect.

Previous Studies/Conceptual Framework

Other researchers have designed studies with similar aims to this action research study. Mango (2015) completed a study that painted a very optimistic picture of iPad usage as a tool for world language study. Conducted in the Arabic classroom on the collegiate level, Mango (2015) asked his students to use their iPads to complete a number of reading, listening, and speaking activities. These mini-projects were designed to foster creativity, and Mango (2015) encouraged his students to use their iPads in creative fashions to complete projects. At the end of the semester, students completed a 5-point Likert questionnaire asking their opinions on the experience. Overall, students were very satisfied with the learning and engagement that occurred and claimed there was little distraction. From the viewpoint of this study, increased learning and engagement could result in higher Latin interpretive proficiency.

Operation LAPIS was chosen for this study due to the cooperative nature of the missions. Some students enjoy academic competition in the classroom through apps such as *Kahoot*, but many of them become frustrated by the games and the competitive nature

of their classmates. Studies have demonstrated that boys enjoy and improve from competition more than girls. Gneezy (2002) states that "men are more competitive than women in the short term," creating a gender gap (para. 4). Based on Gneezy's (2002) data, this study will work with a program that specifically supports team building and cooperation in order to get the best effort from all students.

Cicchino (2015) observed that lower-level discourse most often occurred when students were not mentally engaged in the game. This included activities such as dice rolling and teacher instruction. When students were directly involved in playing the game with other students, levels of discourse and critical thinking increased. Once again, this indicates it was important to monitor engagement during my study. Cicchino (2015) also noted that females performed better than males on his post-test. Since there are concerns in this study about a competitive game based environment, it will be interesting to note gender differences as the research progresses.

Because students in this study played a social game, there was special interest in Lai, Lin, Jong, and Hsia's study (2014). The researchers asked 98 students in an information technology course to play a game that would teach four basic concepts in the course over the period of few days. Over half (54) completed all of the elements of the game, with data showing that many of them signed into the game several times per day. A notable finding occurred when a number of students mentioned that the social aspect of the game made it more enjoyable for students (the researchers, unfortunately, did not release details of their Likert scale findings, so a specific number cannot be provided). This is, however, one of the findings mentioned in the study, and it is significant to this

study since it strives to examine the impact of cooperative (not individual or competitive) game based learning.

Sitzmann (2011) conducted a meta-analysis of literature on the impact of computer-based learning on work-related skills. It was found that game-based learning provides an advantage over traditional learning in specific situations. Participants performed at a higher level when the games required more active participation and they were allowed to repeat them as many times as they wished. "Learning was greater for the comparison than the simulation games group when the comparison group was actively engaged in learning the training material, while the treatment group utilized the simulation game" (Sitzmann, 2011, p. 516). This indicates engagement as a characteristic that must be monitored in the study. Sitzmann (2011) also found that learners performed better when the game served as a supplement to other forms of instruction. This finding confirms the decision of the researcher in the study to combine traditional and game-based learning to maximize student learning outcomes.

Girard, Ecalle, and Magnan (2013) questioned the impact of game based learning. They compared a number of studies that assessed the impact of video games and serious games (defined as games specifically designed for an educational purpose). Overall, the researchers were not able to garner any specific conclusions based on the variety of outcomes in the studies they examined. They remain hopeful for the efficacy of game-based learning, stating that "the arguments taken from the literature concerning the effect of engagement lead us to think that SGs might be powerful tools for learning" (Girard, Ecalle, & Magnan, 2013, p. 216). They mentioned that each individual study must

directly address the game itself (appearance, design, etc.) in order to determine if a specific type of game may be more effective.

Kebritchi, Hirumi, and Bai (2010) performed a study in which they measured the effect of computer games on motivation and achievement in mathematics (which is essentially what this study is attempting with Latin). The researchers used a program called *DimensionM* that included high-quality graphics, multiplayer options, and a highly interactive nature. The experimental group that used *DimensionM* demonstrated significant gains in achievement over the control group. Students, through interviews, demonstrated a belief that the games were an important aspect of their improvement. Among other things, students stated:

- The games took them out of class, changed their mood, and were entertaining.

- The adventure and exploration aspects of the games made them interesting.

- The challenging aspect of the games was interesting.

- The combination of shooting, solving problems, and learning mathematics in the games made them very attractive.

- The way that games combined fun and learning mathematics was interesting.

- The games showed students different ways of learning mathematics. (Kebritchi, Hirumi, & Bai, 2010, p. 435)

Despite these findings, the researchers found that the game had no significant impact on mathematics motivation. Kebritchi, Hirumi, and Bai (2010) hypothesized that students may have separated the game from what they actually consider math class.

Annetta, Minogue, Holmes, and Cheng (2009) completed a study on game based learning in the field of genetics that contradicts the findings of Kebritich et al. (2010). They found that students who played the game, *MEGA*, did not demonstrate a statistically significant difference in achievement than the control group. Students in the experimental group did, however, demonstrate a higher level of engagement that those students in the control group. Annetta et al. (2009) hypothesized that "this finding, although disappointing to some degree, should not undermine the use of this emerging technology. Rather, it helps reinforce the critical need for further research aimed at isolating and documenting the cognitive impact of this technology" (p. 80). Annetta et al. (2009) also argued that games should emphasize instructional content over text and audio. This is an interesting statement, considering *Operation LAPIS* (the game used in the study) emphasizes content over visual and audio aspects.

Brom, Preuss, and Klement (2011) continued to explore the relationship between game based learning and student achievement/attitude. In their study, they designed a game on animal training as a supplement to a traditional lecture. This study is of particular interest as it only uses a posttest for its quantitative data, much like the current study. Brom et al.'s (2011) study, however, differed in that it used two posttests: one immediately administered after instruction and one administered a month after instruction. It found that there was not a statistically significant difference between the performance of the experimental and control groups on the posttest. The control group

actually outscored the experimental group on two of the four tests. It should be noted, however, that the experiment was performed in two classes. In the first class, the control group outscored the experimental group on both tests, while the reverse occurred in the second class. This demonstrates that there may be an issue with sampling. Brom et al. (2011) stated that the data showed the game-based learners functioned at least as well as the traditional learners and that the experimental group (overall) performed better on the retention test (although, once again, the results are not statistically significant). The study also found that game-based learning did not have an impact on student motivation. They hypothesized that adolescents (who were the sample for their study) "may also perceive games as a leisure time activity with limited pedagogical value" (Brom, Preuss, & Klement, 2011, p. 1984).

Brom et al. (2011) also discovered some interesting findings regarding gender. According to their study, 90.2% percent of respondents felt favorably toward the game, but only 86.36% of females as opposed to 93.1% of males. Brom et al. (2011) stated that "it is known that women in general tend to prefer different game genres than men and tend to have different motivations than men for playing computer games and different impact of educational games on boys and girls can thus be expected" (p. 1985). The study revealed that the greatest effect occurred on the immediate posttest and that there was little impact on retention. This study focused on this phenomenon and made adjustments if issues arose regarding gender and academic achievement.

A study conducted in Greece also sheds some light on achievement, motivation, and gender. Papastergiou (2009) allowed experimental subjects in her study to use a very simple piece of software called *LearnMem1*, designing it so that "navigation [could] be as

easy as possible so that students easily find their way around, without the need of any particular written instructions or technical skills" (p. 3). This is important due to Brom et al.'s (2011) findings that females have different motivations for playing games. The game was designed with seven basic elements: "(a) rules, (b) clear but challenging goals, (c) a fantasy linked to the student activity, (d) progressive difficulty levels, (e) interaction and high degree of student control, (f) uncertain outcomes, and (g) immediate and constructive feedback" (Papastergiou, 2009, p. 4). According to the data, the game was academically beneficial to both males and females. There was also no statistically significant difference in motivation levels between the genders. Papastergiou (2009) noted that there was a difference in the genders in the area of "accessibility of learning material and questions" and surmised that this might be due to less initial knowledge of the subject matter. Finally, the researcher noted that the study indicated a more complex game may achieve greater results due to the success of the simple game. This is a claim that requires further research, specifically in terms of gender.

Other studies continue to support the hypothesis that all students can benefit academically and motivationally from a game-based approach. Fe and Grabowski (2007) used a sample of 125 middle-school students, dividing them into 3 groups: one group played a computer-based Teams-Game-Tournament (TGT) game (cooperative game), another played a non-technological interpersonal game (competitive game), and a third did not play games. Students completed a pretest and posttest in the study. Data showed a statistically significant benefit for games in the classroom, as both groups that played games improved more than the control group. There was no difference between the cooperative and competitive groups. The group that participated in cooperative gaming

exhibited a more positive attitude toward math than the group that competed. There was no difference in attitudes between the competition group and the control group. According to Fe and Grabowski (2007):

> The findings showed that math gameplaying did promote test-based cognitive learning achievement. Additionally, gameplaying context (TGT cooperative or interpersonal competitive) played a significant role in moderating the effect of educational gaming on affective learning outcome. (Ke & Grabowski, 2007, p. 256)

Ke (2008a) continued the examination of game based learning in two later studies. A 2008 study utilized the students at a summer math camp. Ke's (2008a) sample was 15 4th and 5th grade students (10 girls and 5 boys). The students played a simple serious game called *ASTRA EAGLE* that concentrated on simple drills with an emphasis on content over graphics/audio. The program scaffolded material by requiring students to fit new mathematical concepts into what they already knew. Following instructions, students completed a Game Skills Arithmetic Test (GSAT) and an attitude survey. Ke (2008a) did not find a significant effect of gaming on the academic achievement of students, but did find that gaming resulted in a more positive attitude toward math. Ke (2008a) noted that:

> this study informed that computer math drill games, even through being more simplistic than commercial role-playing games in terms of visual, activity, and interaction design, still significantly enhance students' positive attitudes toward math learning. In addition, participants have performed committed and effortful

on-task learning when playing certain games where math drills were integral to the gameplay and appropriately challenging. (2008a, p. 1618)

Ke (2008b) continued the comparison begun in 2007 utilizing TGT, interpersonal gaming, and no gaming with 487 fifth grade volunteers from 18 different schools. Students varied in mathematical ability and socioeconomic status. Forty-nine percent of students in the study were female. Ke (2008b) once again utilized ASTRA EAGLE for the study and divided students into six groups. In this study, Ke (2008b) found no significant difference in achievement between students who participated with ASTRA EAGLE and students who did not play games. There was once again, however, a significant positive effect on attitudes toward math. Ke (2008) reported:

Findings suggested that computer games afforded greater retention over time than paper-and-pencil drills: gameplaying participants demonstrated focused attention and enjoyment and expressed reluctance to leave computer labs when a gaming session was ended. On the other hand, in paper-and-pencil drills setting participants demonstrated more feelings of boredom and frustration. This qualitative finding sustains the result of quantitative analysis that students in computer games groups developed significantly more positive math learning attitudes than those in paper-and-pencil drills groups. (2008b, p. 550)

Ke's (2008b) findings in all three studies indicated that game-based learning improves student attitudes toward mathematics. The connection between game based learning and academic achievement is more tenuous.

Other studies do, however, find a significant connection between game based learning and student achievement. Spires, Rowe, Mott, and Lester (2011) used a sample

of 137 eighth-grade students and a piece of software called *Crystal Island*. The game

focused on formulating and testing scientific hypotheses. Spires et al. (2011) attempted

to answer two major research questions:

(a) What is the relationship between students' hypothesis testing strategies and

their science content learning in a game environment?

(b) What is the relationship between students' hypothesis testing strategies and

their in-game performance? (Spires et al.,2011, p. 461)

After performing t-tests, the researchers determined that the game had a medium to large

effect on student achievement. They also found that performance within the game

provided a good prediction for performance on the posttest. Spires et al. (2011)

concluded by cautioning that no single method should be used to reach all students even

though their game based learning model was successful with their sample.

Studies have also been performed that specifically examine the impact of game-

based learning on second language acquisition. Matas and Natolo (2010) completed a

study examining the impact of games on Spanish language acquisition. Using a

convenience sample of third-year Spanish students, the researchers placed students into

pairs to develop grammar games for their classmates. A majority of students in the study

found the games beneficial to their learning and felt that they were more motivated in

Spanish. Matas and Natolo (2010) concluded with the assertion that "more broadly, these

findings support the view that real learning is self-discovered, personally appropriated

and assimilated in experience" (p. 380). This was important as this current study

considered the historical context of the study, beginning with the experientialism of

Dewey (1938).

Cobb and Horst (2011) conducted a quasi-experimental study in which they used at program called *My Word Coach* designed for a Nintendo handheld system to help students with English vocabulary. Students were separated into two groups over four months. All groups took a pretest, and then a two-month period followed in which one group used the game as a supplement to regular classroom learning. After a posttest, the groups again completed a pretest and switched roles. The data found that students achieved "gains in recognition vocabulary normally achieved in one to two years, longer oral productions, reduced code switching, and increased speed of lexical access" (Cobb & Horst, 2011, p. 639). The researchers also noted increased retention consistent with the findings of Brom et al. (2011).

Increased retention is also a theme according to Hitosugi, Schmidt, and Hayashi (2014). The researchers used a United Nations-sponsored game called *Food Force* to introduce new Japanese vocabulary to their experimental group. The control group acquired new vocabulary through traditional worksheets. Using a pretest-posttest design, the researchers concluded that students using traditional means scored nearly as well as students using Food Force when given an immediate posttest. After five weeks, however, there was a significant advantage in retention for Food Focus words. Students also indicated that Food Force made them feel more positive toward language learning. The researchers do leave readers with a few words of caution:

> For students who did better with textbook words, the rich media content in the videogame may have caused cognitive overload, thus hindering their processing of the newly introduced words. Some low FF vocabulary scores may also be due to issues with technological self-efficacy. As one student said in the interview,

"Computers and me do not mix well. I do not learn anything well on the

computer." Students like this one may unintentionally block opportunities to

learn due to low technology efficacy or perhaps an increased affective filter.

(Hitosugi, Schmidt, & Hayashi, 2014, p. 32)

It was important to monitor any unintended negative effects on students as the study

progressed. This study also demonstrated the need for an orientation to digital learning

for those students who may not be comfortable learning on an iPad.

Hung, Young, and Lin (2015) chose to examine the impact of game based

learning on closing the achievement gap as defined by No Child Left Behind (NCLB).

The researchers employed the Wireless Crossword Fan-Tan Game (WiCFG) on tablet

computers supplied to the students. They divided 30 students (15 males and 15 females)

into a control and experimental group. Each group of 15 was then divided into a

subgroup of one low-achievement student and two high-achievement students. A mixed

methods study was employed, meaning that both qualitative and quantitative data were

collected. The researchers found that there was no significant difference in achievement

between high-achievers in the experimental group and the control group, but there was a

significant difference for low-achievers in the experimental group. The students also

expressed a positive attitude toward the activities, learning English, and the game-based

approach. Based on their findings, the researchers suggest:

To close the achievement gap and improve disadvantaged students' learning

achievement, this study suggests the guidelines of the classroom strategy: (1)

equal opportunity, (2) heterogeneous groups, (3) inter-group collaboration, (4)

intra-group competition, (5) learning by playing, and (6) one-on-one technology.

(Hung, Young, & Lin, 2015, p. 47)

Even though it is not one of the stated goals, the study was interested to examine the impact of *Operation LAPIS* on the achievement of struggling students.

Hautopp and Hanghøj (2014) completed a study in which they examined the impact of classroom teaching on game based learning with bilingual adults. *The Danish Simulator* is a very simple, text-based game that focuses on the expansion of spoken Danish. When students used the game in class, there were mixed reactions. Some students were concerned about the simplicity of questions and answers and expressed a desire to use more complex structures of the language. The teacher in the study used this feedback to build classroom activities around the visual images in the game, thus allowing students to expand their use of the language during non-gaming classroom activities. Hautopp and Hanghøj (2014) emphasized that this requires a teacher to implement the game activities into the classroom, which requires a high proficiency in the language. "The findings presented here point to the need for further studies with a focus on how teachers may assume active roles in designing and redesigning the educational use of training games for language learning" (Hautopp & Hanghøj, 2014, p. 197).

Johnson (2010) examined the impact of an advanced serious game, the Tactical Language and Culture Training System (TLCTS), in second language acquisition. The TLCTS "utilizes game design techniques to promote learning, e.g., by providing learners with missions to achieve, supporting fluid gameplay in the form of simulated conversations with non-player characters, and providing continual feedback on learner

performance within a game scenario context" (Johnson, 2010, p. 175). Johnson (2010) cited three studies, all involving military personnel, which showed significant increases in knowledge of Iraq-Arabic culture and language. Two of the groups had increases in speaking and listening self-efficacy (data was not submitted for the third group). Johnson (2010) did question the overall learning effect of the game, as many participants spent more time in game mode than Skill Builder mode. Those participants may have been simply playing a video game rather than actively learning.

Peterson (2010) examined the potential uses of massively multiplayer online role-playing games (MMORPGs) on second language acquisition. The researcher compiled a list of potential learning advantages for MMORPGs, including:

- Access to diverse groups of interlocutors, including native speakers

- Multiple communication channels provide real-time feedback Exposure to the TL

- The presence of text and scrolling supports monitoring

- Extensive opportunities for purposeful TL use and reuse in an authentic and engaging communicative context

- Practice in the four skills

- Opportunities to engage in co-construction, negotiation, and the development of communicative competence

- Learner-centered interaction encourages active participation

- Enhanced cross-cultural knowledge

- Motivation enhanced

- Enjoyment

- Situated learning

- Community formation

- Development of collaborative social relationships

- Enhanced immersion

- Opportunities for role-play and risk-taking

- Reduced inhibition and social context cues (Peterson, 2010, p. 432)

Peterson (2010) concluded that recent studies show that there can be advantages to learning a language in a virtual world, but that further research is necessary. In addition, Peterson (2010) cautioned that this type of learning may be overwhelming for a novice since they will not have the language skills that allow them to interact with all users.

Reinhard (2012) reviewed the current state of using games to learn Latin, stating that "Latin lags significantly behind its world language counterparts as far as the quality and designed a number of years ago that have limited credibility and usefulness to students. Reinhard (2012) declared that there is no available contemporary video or computer game to help students learn Latin language or culture, and suggests the building of a virtual world to satisfy this need. This article was published 2 years before the release of *Operation LAPIS*. Based on Reinhard's (2012) statements, there is a gap in the literature on the effects of computer game-based learning on Latin proficiency and student attitudes.

List of Key Terms

- Constructivism: The constructivist theory of education states that the learner constructs all meaning as he or she interacts with the world intellectually and socially. According to Hein (1991), this means that teachers and instructors must

focus more on the learner because the learner constructs the lesson. The learner

constructs meaning through personal experience. Three major theorists who

subscribe to concept of constructivism are Dewey, Piaget, and Vygotsky. A game-

based learning curriculum allows each student to construct his/her path in the

game.

- Cooperative Learning: According to Felder and Brent (n.d.), cooperative learning

    may be defined as "an approach to groupwork that minimizes the occurrence of

    those unpleasant situations and maximizes the learning and satisfaction that result

    from working on a high-performance team" (para. 2). Students must work in

    teams to complete a goal that contains the following elements: positive

    interdependence, individual accountability, face-to-face interaction, collaborative

    skills, and group processing.

- Educational Technology: According to the Association for Educational

    Communications and Technology (AECT) (2004), the official definition of

    educational technology is "the study and ethical practice of facilitating learning

    and improving performance by creating, using, and managing appropriate

    technological processes and resources" (p. 1). Within the definition, the term

    technological may refer either to resources or processes. For the purpose of this

    study, the focus will be on resources (iPads, software, apps, etc.).

- Experiential Learning: Major educational theorists such as Dewey, Piaget,

    Vygotsky, and Lewin are proponents of experiential learning. The University of

    Colorado's Experiential Learning Center defines the concept as "a process

    through which students develop knowledge, skills, and values from direct

experiences outside a traditional academic setting" ("What is experiential learning?" n.d., para. 1). Students should reflect, take initiative, engage intellectually, and learn from mistakes and successes when engaging in experiential learning. A game may be considered an experiential learning device as it places the student in a virtual reality (such as Ancient Rome, in the case of *Operation LAPIS*).

- Game Based Learning: Commonly abbreviated as GBL, game based learning is "a type of gameplay that has defined learning outcomes" (EdTech Review, 2013, para. 1). Games should attempt to balance entertainment with subject matter. Teachers should expand upon material learned in the game while in the classroom setting. Effective GBL teaches students behaviors and thought processes that they may use successfully in the classroom.

- Motivation: Korb (2012) lists six factors that motivate students to learn according to contemporary research. They are student control of learning, relevance to student use and teacher's genuine interest, teacher's enthusiasm, quick feedback and assignment return, instructional variety, and encouragement (p. 7-8). This study examined to what degree the use of game based learning motivates students and moves them up the affective domain.

- Multiple Intelligences: Dr. Howard Gardner of the Harvard Graduate School of Education proposed the psychological theory of Multiple Intelligences. Gardner adapted his theory, and there are now eight major Multiple Intelligences (see Introduction). Individuals may demonstrate proficiency in a number of Multiple

Intelligences. Gardner did not develop a test for Multiple Intelligences, but Branton Shearer utilizes a test known as the *MIDAS* ("What MI am I?," n.d.).

- Nine Events of Instruction: Gagné (1965) developed this theory that lists nine events necessary for learning. Please see the Literature Review that lists the nine events. Both the Nine Events of Instruction and Theory of Multiple Intelligences support game based learning, according to Becker (2005), as they allow and encourage students to learn in a variety of ways.

- Personal Computing Device: A personal computing device is a piece of technology designed for use by a single individual at any one time. In the common vernacular, these are handheld devices such as smartphones and tablet computers. The study used the iPad, issued to all students through the selected school's district, as the personal computing device.

- Second Language Acquisition: Second language acquisition is "the name of the theory of the process by which we acquire or pick up-a second language" ("Second language acquisition," 2008, para. 1). Krashen is one of the top theorists on modern (spoken) languages acquisition. Because Latin is traditionally taught as a "dead" language, there is little research on best practices for second language acquisition as it relates to Latin. The study hopes to test the merits of game based (experiential) learning.

- Serious Game: "Serious games are games designed for a purpose beyond pure entertainment" ("Definition of serious games," n.d., para. 1). Educational games are considered serious games because they have student learning and achievement as primary goals. Many serious games maintain high-quality graphics and sound

in order to entice learners to play. The effect of this is questionable (see Chapter 2).

Conclusion

The literature review for this action research study focused on two main areas: theory and recent experiments. Investigation of the theories of experientialism, constructivism, and cooperative learning led the researcher-practitioner to wonder how these concepts could be implemented in his classroom through the use of a personal-computing device. Further research into the affective domain, the Nine Events of Instruction and Multiple Intelligences resulted in the researcher applying the above theories to cooperative, game-based classroom activities. The researcher then informed his own research through the examination of studies conducted over the past 20 years regarding game-based instruction and its impact on the classroom (including impact on different genders). There were a variety of findings in the literature regarding affective impact, leaving this topic ripe for an action research study.

CHAPTER 3

METHODOLOGY

Introduction

The problem of practice in this action research study involves the introduction of

the iPad to every high school student in the researcher-practitioner's high school. Due to

lack of training, neither teachers nor students are using the technology effectively. Many

teachers only use the iPad as a replacement for a note-taking device, while many students

utilize the iPad for games, creating a discipline issue. The researcher-practitioner

wondered if there was a way to use the iPad to engage the students intellectually and

affectively, and eventually turned to game-based learning to seek an answer to the

problem of practice. The research question was: To what extent does game-based

learning impact student attitudes toward Latin, language learning, and technology? The

purposes of the study were to measure the affective impact of the game on a group of

Latin 1 students and to determine if there was a difference in affective impact by gender

(the social justice component of the work).

Mixed-Methods Design

The action research study in question is best described as a mixed-methods

design. The researcher-practitioner asked the participants to complete a Likert scale three

times over the course of the study (beginning, middle, and end). Basic statistics were

gathered for each of the items (means and standard deviations may be found in Chapter

4). The researcher-practitioner then used systematic classroom observations, weekly journal entries from students, and semi-structured interviews at the end of the study period to collect qualitative data. The goal of the researcher practitioner was to polyangulate the quantitative and qualitative findings to ensure they were consistent (or to investigate their inconsistency). Mertler (2017) encouraged practitioner-researchers conducting action research to use multiple sources to polyangulate the data collected from the sources. "Polyangulation is the process of relating or intergating two or more sources of data to establish their quality and accuracy" (Mertler, 2017, p. 42). This process served to confirm that the effects measured by the Likert scale (impressions of students) were found in other qualitative sources (impressions of the researcher-practitioner). A solely qualitative or quantitative study would have been less effective because it would not have allowed for the polyangulation of the findings.

Researcher

It can be difficult for an action researcher to maintain objectivity during the course of a study because he/she is often the teacher of the class. That is the case in this action research study. In the continuum Mertler (2017) provided, the researcher in this case would be classified as a full participant. "A full participant is simultaneously a fully functioning member of the 'community' as well as a researcher" (Mertler, 2017, p. 96). The benefit of being a full participant is the understanding that one gains about the group and its individuals.

In this study, the researcher-practitioner was the data collector and analyzer. When collecting data from students, the researcher-practitioner asked students to be honest and remember the purpose of the data collection. Participants were reminded that

negative responses were just as valuable as positive responses since we (as a group) were attempting to measure the affective impact of a classroom tool. In this beginning of the study, the students seemed dubious about the researcher's request for honesty. This became a matter of trust as the semester progressed, and the researcher-practitioner believes that the data is comprised of honest responses.

The researcher-practitioner also had to remain objective in analyzing the data. This was simple with the quantitative data, as SPSS software was used to produce simple statistics (means and standard deviations). The researcher-practitioner used coding with the qualitative data, separating data into various positive and negative categories via a color scheme. The majority of feedback was positive, which helped eliminate the possibility of a biased observer. It also allowed the researcher to focus on material that was coded in a negative fashion and address it in the findings and action plan (Chapters 4 and 5).

Reciprocal reflection is a key component of the action research process. The researcher-practitioner's school is on a 4 X 4 schedule, which means classes meet 90 days for 80 minutes. The class selected for the research (and the research period) began in mid-January 2017. The research period ended late March 2017. Data analysis was conducted over the next two months. On May 26, 2017, the researcher-practitioner spent an 80-minute period discussing the results of the study with the participants. This time also provided the participants with an opportunity to influence the action plan for further study (this will be discussed in Chapter 5). This reciprocal reflection was a key final point of the current cycle of the action research process as it allowed the researcher to

confirm that his findings matched student impressions. This reciprocal reflection continued throughout the action research cycle.

Participants

The participants in the action research project were a convenience sample, as they were the group of students comprised of a Latin 1 class, in Spring 2017, at the researcher-practitioner's school. There were 16 students in the course at the beginning of the semester, and 16 students completed the course. (Chapter 4 will discuss the removal of a student from the study). These students were all from a large suburban high school in the Southern United States. Demographics of the 15 students who completed the study are as follows:

- 8 males, 7 females

- 12 white, 2 black, 1 Hispanic

- 4 students with documented disabilities who receive special education services

This number represented a typical group, as the average Latin 1 class in the school has had around 15 students over the past 8 years. There was also a balance of males and females that was appropriate for the social justice aspect of the research. There were few ethnic minorities in the course, but this has been true of typical Latin 1 courses at this school. It will be worthwhile to do a social justice component for minorities in a future cycle to examine the affective impact of the game on them.

The researcher-practitioner requested access to this group of students for research during the 2015-2016 academic year. When preparing to submit information for IRB approval, he met with his district's Director of Research to describe the project. The

researcher-practitioner received permission from the district in May 2016. He then received IRB approval for the project in July 2016.

The researcher-practitioner made an ethical decision to keep parents and students fully informed about the process from the beginning. On the first day of the course, the researcher chose to take around 30 minutes to outline the study and its purposes. This served to inform the sample regarding the goals of the study and to begin to build reciprocal trust. The researcher-practitioner explained the importance of the data to his educational future and requested honesty from the subjects. He asked students to separate the concepts of the teacher and the researcher, and promised that he would never penalize students for honesty. This was a continual theme during research, and a promise that was never broken. Finally, the researcher-practitioner sent home assent forms for participants and parents/guardians. It is ethical to provide all participants and their guardians (if participants are under 18) with written declarations regarding the experiment. The student assent form may be found in Appendix D and the guardian assent form in Appendix E.

Setting

The setting for this study was in a large suburban high school in the Southern United States. The high school's district is very supportive of World Language study and encourages the use of technology by providing an iPad to every student and teacher in the school. The school is located in a politically conservative section of the state.

Community and building gatekeepers were the school's superintendent, the district's coordinator for World Languages, and the school's principal. The researcher

was required to submit paperwork and findings and have his research approved by these individuals.

Building Trust

The researcher-practitioner served as the participants' Latin 1 teacher during the 2016-2017 academic year. He was open about serving both roles with students, parents, and other stakeholders. On the first day of class, the researcher explained the project and sent letters home to parents asking for permission for their children to participate. The researcher also discussed the process with parents during open house, parent conferences, and other events. Data was reflected upon regularly in group settings and that will added even more qualitative data. The researcher constantly emphasized his first priority as a teacher and stated that he would not allow research to harm the educational process for any student.

Positionality

It is most critical to remember that the researcher-practitioner in this study not only served as the researcher, but also as the Latin teacher for the students involved in the survey. He was a "full participant" (Mertler, 2017). The completion of the research, therefore, ethically had a lower priority than teaching the students to the best of his ability. If the researcher taught the course effectively, the data would hold more validity. Since the researcher was an insider to the students, it was important to remind them to be objective and to attempt to avoid personal feelings about the teacher when involved in the research process.

Instrumentation and Materials

There were four major instruments used over the course of the study. The first

instrument, a Likert scale, produced quantitative data (means and standard deviations)

that reflected student perceptions of the affective value of game-based learning. The

researcher-practitioner utilized a five-point scale to ask students the degree to which the

valued the game, traditional learning, etc. The Likert scale had 10 total questions about

game-based learning and 1 demographic question (identified gender). The gender

question made it possible to disaggregate the data in regard to the social justice issue

being examined in the study. See Appendix A for a copy of the Likert scale.

A field notes sheet was utilized for systematic classroom observations. The field

notes were designed following the structure Mertler (2017) suggested. The researcher-

practitioner used the left side of the form (Observation) opposed to the right side

(Analysis) because "the separation of these two types of commentaries is critical so

that *actual* observations are not confused with what you think the observed event *means*"

(p. 131). Analysis was considered and added at a later time. The field notes sheet

allowed the researcher-practitioner to maintain organization by noting the day, day of the

project, and time of observation. The field notes sheet may be viewed in Appendix B.

At the conclusion of the research period, each student involved in the study was

required to complete a 15-minute semi-structured interview with the researcher-

practitioner. This interview may be found in Appendix C. Each interview was recorded

on the researcher-practitioner's iPad and was transcribed. The questions were designed to

gauge the subjects' feelings about *Operation LAPIS* and ask them to reflect upon whether

anything could have been done better in the course with technology and/or game-based learning.

Each week, students were required to write a 1-paragraph minimum reflection on their experience with the game in Schoology, researcher-practitioner's district's online management system. These were uploaded to Microsoft Word and color-coded.

Two methods were used to determine trustworthiness of the instrumentation. Internal consistency reliability was measured for the Likert scale to determine inter-item correlations. If the items are measuring similar ideas, it is logical that the correlation would be closer to 1. After reversing the scoring on questions 3 and 7 (because they placed traditional, non-technological learning at the high end of the scale), this Likert scale possessed reliability of 0.81, demonstrating a high degree of reliability.

One cannot measure qualitative data mathematically, so it must be deemed trustworthy by a method known as polyangulation. By comparing the results of the classroom observations, interviews, journals, and Likert-scale data, a researcher can ensure that the results across all forms of measurement are consistent. If the Likert scale data is high, but the researcher finds a great deal of negative data in the qualitative data set, there is a problem with trustworthy data. That did not, fortunately, happen in this data set.

Data Collection

All data collected through the use of four methods (Likert scale, classroom observation, semi-structured interview, and personal journals) was used to determine the findings of this action research study. Each tool focused on the affective impact of game-based learning in the Latin classroom, and the use of data from each tool allowed for

52

polyangulation of data. Since the data was consistent when polyangulated, it allowed the researcher-practitioner to answer the research question based on the results for this group of students.

The Likert scale data was collected three times: at the beginning, middle, and end of the research period. The first time it was collected, students did the survey on paper and the researcher-practitioner entered the results into SPSS. The second and third administrations were conducted via Google Forms. This downloaded the results directly into a spreadsheet that could be downloaded into SPSS. Data analysis consisting of means and standard deviations were calculated immediately after data was placed into SPSS. If a student was absent during one of the Likert days, he/she completed it upon entering class the next day.

The classroom observations were conducted systematically, with the students never knowing which group was the focus of the day. There were six groups of students in the room based on the game characters they chose. Over the course of a two-week span, the researcher-practitioner would observe each group on a Monday-Wednesday-Friday schedule. During the third week, females were the focus of observation (females were also observed as part of the larger group as members of their character group). In a three-week period, therefore, each male student would receive one observation and each female student would receive two observations. This pattern continued over 9 weeks, with adjustments made for absent students.

Semi-structured interviews were conducted and transcribed during the ninth (final) week of the study. These interviews were conducted in the hallway outside of the classroom while other students worked on an independent project inside the classroom.

Electronic journals were downloaded from Schoology to Microsoft Word at the end of school each Friday. If a student did not complete his/her journal, they were assigned to do so during Independent Learning Time (ILT) the next Monday.

Data Analysis & Reflection

The data was analyzed over a period of two months (late March 2017-late May 2017). The quantitative data was done quickly because it only required entering the data into SPSS and ensuring the numbers had been input correctly. The researcher examined the numbers that were produced and speculated about findings based on those numbers. He then analyzed all of the classroom observations, color-coding observational notes by gender, positive statements, and negative statements. The researcher-practitioner found overwhelmingly positive statements that matched expectations from the Likert scale. The negative data was put to the side so that it could be addressed at the final reflection with participants. The same pattern held true for the semi-structured interview. A few participants were not very talkative, but only one was negative about the entire experience. This was, once again, placed to the side for the final reflection. Finally, the researcher-practitioner read the journals. These felt forced and very little new information was garnered from them. The fate of journals will be discussed in Chapter 5. The repetition did serve, however, to polyangulate all findings. At this point, the researcher planned to discuss the findings, including the discrepancies, with the students during a round table meeting on May 26. This meeting will be discussed in more detail in Chapter 5.

Conclusion

The mixed methods design employed in this action research project derived logically from the problem of practice, research question, and purpose statements. The problem of practice involved the use of iPads in the classroom for an effective purpose besides note-taking or game-playing. The research question asked whether game-based learning would have a positive affective impact on the Latin classroom. The purpose of the research was to measure the affective impact of game-based learning on this group of students and determine whether the affective impact varied by gender. By using mixed methods to confront these issues, the researcher-practitioner was able to determine how the students viewed the solution through the numbers in the Likert scale and then compared those numbers to qualitative findings from systematic classroom observations. This compared the students' perception to the researcher's perception. The researcher-practitioner was then able to further polyangulate the findings through semi-structured interviews and the students' reflective journals.

Chapter 4 will summarize findings and describe implications from those findings. Chapter 5 will conclude the study and suggest a cyclical action plan to further this research.

CHAPTER 4

FINDINGS AND IMPLICATIONS

Introduction

This action research study answered the following research question: To what
extent does game-based learning impact student attitudes toward Latin, language
learning, and technology for 15 Latin 1 students in a suburban high school? The research
question is critical due to the problem of practice identified at the researcher's high
school where students and faculty members are issued iPads for academic use with
limited training regarding their benefits and application potential. According to the
school's district office, however, in order for personal technology to benefit every
student, there must be an intentional plan to use the iPads to enrich students with the use
of methods that could not be achieved without the iPad. The purpose of the study was to
measure the affective impact of the game on a specific group of Latin 1 students in one
southern suburban high school and to determine if the affective impact varies by gender.
Students in Latin 1 classes at this high school utilized a game-based curriculum called
Operation LAPIS that supplemented the traditional curriculum. This addressed the
problem of using technology for a defined and well-planned academic purpose, as
students utilized a game to assist in the learning of a secondary language.

Data Collection Strategy

The goal of the data collection strategy was to answer the research question of measuring the impact of *Operation LAPIS* on the affective domain for 15 Latin 1 students. The researcher accomplished this goal with the collection of a rich and balanced set of qualitative and quantitative data. At the beginning of the study, the researcher allowed each student to determine which character he or she would role-play for the duration of the study. Immediately after students made their choice, the researcher placed the students in groups and constructed a schedule by which observations would be conducted. The researcher designated three days per week as observation days and focused on a different group on each of the three days for a period of approximately 15 minutes. In a two-week cycle, the researcher would conduct an observation on each group. In the third week, the researcher focused the observation tool on female students only, circulating around the room to record their remarks and reactions to the game. This was done due to the social justice component of the study, focusing on the impact of cooperative games on female students. Over the 9 weeks of the study, therefore, the researcher was able to complete three full cycles of observations as described.

The study began on January 9, 2017 (the third day of the class for the Latin 1 students involved in the study) and ended on March 10, totaling nine weeks of instructional time. The Latin 1 class met from 8:30 am until 9:40 am daily (80 minutes per day, 400 minutes in an uninterrupted week). All data was collected and recorded during class time. The study did not begin on the first day of the semester because consent forms had to be signed and collected from parents/guardians and participants in

the study. All of these were returned by January 8. On January 9, class began with a

paper-based Likert survey regarding opinions on Latin and game-based learning. This

survey (changed from paper-based to a Google Form) would be administered again on

February 10 and March 7. The timing of the surveys was designed to measure change

between the beginning, middle, and end of the research period. For the second and third

administrations, the survey was distributed and completed via Google Forms. If students

missed a survey, they were asked to complete it during the gameplay portion of the class

the next day. Each student who finished the study completed all three administrations of

the survey.

The semi-structured interviews at the end of the research period were scheduled

for the week of March 6-10, with the researcher scheduling three interviews daily. Each

interview lasted approximately 15 minutes during the class period. The researcher

scheduled one interview during the gameplay portion of the class and the other two

during independent work. Interviews were conducted alphabetically by the student's last

name, with the exception of two students who had their interviews on alternate days due

to absences.

Data Themes

The study is divided into two major themes: the affective domain and gender

equity. Both were measured via qualitative and quantitative data. The researcher

observed students on a regular, systematic basis as they played *Operation LAPIS* during

the research period. Specific groups were observed on a regular basis to ensure that the

reactions of all students received a fair amount of analysis and attention during the time

frame. At the conclusion of the study period, the researcher conducted individual

interviews with the participants during a one-week period (three interviews were conducted daily). These semi-structured interviews were used to support (or raise questions regarding) observations recorded by the researcher. All observations and interviews were separated by gender with comments coded by attitude (positive or negative) and equity (did female students feel the game was fair?).

Over the course of the study, students completed a Likert scale three times that measured their attitudes toward game-based learning and Latin. This quantitative data was used to polyangulate the researcher's observations during the study. Both attitude and equity were addressed through qualitative and quantitative research, as responses were analyzed by gender.

Ongoing Analysis and Reflection, Early Challenges

Neutrality allowed on the Likert scale.

The researcher was concerned about the Likert scale data (see Appendix A) from the beginning of the study. The data, which was collected via a paper survey, reflected a great deal of neutral opinions from students. In many ways, this was a natural reaction (Johnson & Morgan, 2016) as they had only experienced two Latin classes and had not played *Operation LAPIS*. The researcher would learn later in the semester that it was best to give subjects a Likert scale with an even number of options in order to force them away from neutrality. "When a middle position was explicitly offered in interviews, the percentage of respondents choosing such an option was higher than for respondents for whom a middle position was not explicitly offered" (Johnson & Morgan, 2016, p. 85). Ultimately, the researcher decided that a change would invalidate the ability to compare

the results of the first administration with the second and third. In future cycles, the survey will include six options.

Complexity of the game.

Another early struggle that the researcher faced was the complexity of the game. Appendix F is a copy of the Excel spreadsheet that was completed and coded for each student in the game. Instructions for *Operation LAPIS* provided by the Pericles Group (n.d.) indicated that there were a number of game elements (student spreadsheets, Mission control spreadsheets, and web organization) that must be completed before the game can begin. This setup resulted in approximately 10 hours of work for the researcher during the weekend before the research period. As the researcher examined the *Operation LAPIS* curriculum, serious consideration was given to extracting the academic parts of the game and running a simpler form of the program. Despite the time-consuming nature of the setup, the researcher decided that changing the game would not allow for a fair judgment of the game. In future research cycles, the game may or may not be simplified based on the results of previous cycles.

Instructor bias.

Preconceived notions and ideas from 15 years of teaching experience entering the research period also challenged the researcher. As the researcher-practitioner read the scenarios and activities related to the game, he became concerned that the students would consider many of them to be juvenile. As an example, in the second module, the students must confuse one of the antagonists by convincing him that a wild animal is in the area. The students must do this in Latin by saying, "Look! It is a …!" ("Ecce! Est …!"). The academic concept in the background is that students will need to look up and use five

new animal vocabulary words. The researcher questioned whether high school students would embrace this and had to take care not to express doubt to the students. This could influence their opinions on the game and its effectiveness.

Endurance and energy.

Finally, there were a number of times that the researcher faced challenges regarding endurance and the integrity of the study. The study, as was noted earlier, was completed over a period of nine weeks. In the first three-week research cycle, it was simple to complete observations, motivate students, and prepare for the technological requirements of the game on a daily basis. After the first cycle, however, motivation seemed to wane occasionally for both the researcher and the participants in the study. The researcher considered skipping a few days with *Operation LAPIS* in order to complete other assignments or teach other topics. Instead of following the observation schedule, the researcher considered completing the observations at a different time. Students were caught playing games on their iPads instead of completing their *Operation LAPIS* missions. At one point after the second Likert survey, the researcher considered a weeklong break from *Operation LAPIS*. Ultimately, however, data showed that students enjoyed the game and benefiting from its play. In the interest of student learning and study integrity, there were no unscheduled breaks during the research period.

Reflective Stance

One of the major issues that arose during the middle of data collection was the removal of a student from the study. The study began with 16 students at the beginning of the semester. One male student, although he and his guardians had signed an assent form, chose to refuse to participate in almost all activities related to *Operation LAPIS* and

Latin 1. Since the student was not participating in the activities, the researcher-practitioner felt that his data would not be valuable to the study. All references to the student, therefore, were removed from the study prior to submission and publication.

The researcher-practitioner also had to rethink the essence of the study during the data collection period. Initially, the impact of the game on Latin interpretive proficiency was going to be an additional research question. The researcher-practitioner found, however, that a third research question resulted in too much data and confusion in the material being presented. After a conversation with his DiP advisor, the researcher practitioner chose to eliminate Latin interpretive proficiency as a topic of study in this dissertation in practice. Since action research is iterative, however, the topic and earlier research could be useful in a future cycle/action plan.

Data Presentation and Analysis

Quantitative Data.

The eight males and seven females who participated in this action research study provided a wealth of data. The following three tables provide basic statistics for each administration of the Likert scale. The male/female mean is also provided for each question.

Table 4.1

Results for the Likert Scale Administered January 9, 2017

Question	Mean	SD	Male Mean	Female Mean
Excitement	3.87	.990	3.84	4.02
Learning	3.80	.941	3.73	3.92
Traditional	2.93	1.033	2.95	2.71

Comfortable	3.60	.828	3.54	3.70
Individual	3.27	.884	3.32	3.11
Learn Tech.	3.60	.910	3.54	3.70
Learn Book	3.67	1.047	3.92	3.54
Learning more	3.53	.834	3.32	3.70
Ease of use	3.80	1.014	3.73	3.92
Continue Latin	3.87	1.060	3.41	3.92

Table 4.2

Results for the Likert Scale Administered February 10, 2017

Question	Mean	SD	Male Mean	Female Mean
Excitement	3.93	.854	3.91	3.95
Learning	3.91	.932	3.82	4.05
Traditional	2.35	.808	2.41	2.23
Comfortable	3.73	.833	3.65	3.85
Individual	3.64	.912	3.63	3.66
Learn Tech.	3.90	.711	3.85	3.99
Learn Book	3.89	1.02	3.99	3.71
Learning more	3.70	.832	3.63	3.82
Ease of use	3.97	.359	3.96	4.01
Continue Latin	4.02	.865	3.86	4.43

Table 4.3

Results for the Likert Scale Administered March 7, 2017

Question	Mean	SD	Male Mean	Female Mean
Excitement	4.07	.884	4.03	4.11
Learning	3.93	.884	3.81	4.07
Traditional	2.40	1.056	2.32	2.57
Comfortable	3.80	.941	3.78	3.83
Individual	3.60	.986	3.63	3.51
Learn Tech.	4.07	.884	4.03	4.11
Learn Book	3.93	.799	2.32	2.57
Learning more	3.73	1.387	3.60	3.82
Ease of use	4.00	1.069	3.98	4.03
Continue Latin	4.27	1.387	3.79	4.53

These three tables tell an interesting story about the perceptions of the students in the Latin I class being studied. The mean increased on every question that described games and/or technology in a positive manner and decreased on any question involving traditional study or independent work. The reverse happened when questions were written to favor traditional/textbook instruction. These numbers indicate that the students felt positively toward game-based learning and world-language learning. The game seemed to have a positive affective impact for this group of students according to the quantitative data. The data also shows that females had a slightly more favorable view of game-based education and technology in general, thus answering the social justice question of this research.

Qualitative Data.

The eight males and seven females who took place in the study provided a wealth of qualitative data in terms of multiple classroom observations, a semi-structured interview, and a weekly journal. Each individual was directly observed playing the game a minimum of three (boys) or four (girls) times, and each individual participated in a semi-structured interview at the end of the study. Observations were recorded using a field notes template (Appendix B). Semi-structured interviews followed the same pattern for all students (Appendix C). The researcher took detailed written notes during each of the semi-structured interviews and also requested permission to record each of the interviews on the researcher's iPad. Each student allowed his/her interview to be recorded. The researcher-practitioner also emailed each parent and asked for permission to record the interview. The files were kept on my secured iPad until they were transcribed. After transcription, all the files were moved into a secure, password-protected cloud account.

At the conclusion of the research period, the researcher separated field notes and semi-structured interviews by gender. Notes and quotations for males were coded into two major themes: attitude and gameplay. Females were coded with the additional concept of gender equity. Organization began with highlighting written notes, classifying each observation or quote into one of the three themes. Then, an Excel spreadsheet was prepared for each student with dates as rows and themes as columns. Each student had four or six columns, as each theme was divided into positive and negative reactions. This allowed the researcher to organize all data into themes that help answer the research question and view whether the participants considered the themes in a positive or

negative light. The researcher-practitioner felt this was important since the literature review demonstrated that female students do not always do well with games (even though research demonstrated they do better with cooperative games such as *Operation LAPIS*).

Several themes emerged from the interviews and observations. Seven of the males in the study and six of the females were positive about all aspects of *Operation LAPIS*. Phrases and words that were used to describe the experience of playing the game included:

- Awesome (male).

- Fun (female).

- I looked forward to it every day (female).

- It helped me learn the stuff I was supposed to learn for the rest of the class (female).

- I didn't have to study as much as I thought because of the game (male).

- Will we use it next year? (female)

- I liked working with my team everyday (female).

- I didn't need to compete with them (my classmates) because we were playing against the game (male).

- There wasn't a lot of pressure to beat other people in the class (female).

- I don't think I would have liked it as much if I were messing around with other real people in my class. That makes me feel guilt (female).

The students who were positive about the experience did have some suggestions for improvement, documented below:

- I wish it taught grammar in the same order as our book. It was too easy sometimes and too hard sometimes (female).

- The translations were too easy sometimes (male).

- The stories need more action (male).

- Our book and the game should use the same characters (female).

- You should throw away our falling-apart books and only use this (male).

- Sometimes the videos were really middle-school (female).

- I didn't understand why we were doing some of the assignments. They didn't match what we were doing in the rest of the class and seemed random (female).

Overall, these 13 students were very positive about the use of *Operation LAPIS* in the classroom. None of them thought it was perfect and each of them offered suggestions to improve the experience. Several of these will be discussed in Chapter 5 when future research opportunities are examined. All of the girls included in the above group commented about the positive nature of collaborative game play, and three of them actually questioned whether they would have liked competitive game play.

The two students (one male and one female) who were negative about the experience are very different students. The male should be a very capable student based on test scores, but this ability is not reflected in his grade point average. He very rarely participates in class and often turns in assignments blank. His comments regarding *Operation LAPIS* included:

- Why are we doing this?

- It didn't make the class any better or worse.

- I'm taking German next year anyway.

- Not doing it would have improved the course.

The student did not participate in many classroom activities, including several modules of *Operation LAPIS*. It would be easy to disregard the student's comments, but the researcher believes that it is the responsibility of the teacher to reach all students. The course as a whole, including *Operation LAPIS*, failed to engage this student, and that must be considered in the action plan discussed in Chapter 5.

The female student who made a number of negative comments is a high-achieving student who currently has a 3.75 grade point average as a freshman. She is from a military family, and this is her first full year in the state. The student's mother is from another country, and the student speaks the mother's language fluently as well as English. The student, a freshman, indicated to me that she enjoys Latin and plans to take it through the Advanced Placement level during her senior year. During the observation period, the student was observed finishing her *Operation LAPIS* assignments very quickly, closing her iPad loudly, and pulling out a personal book to read. She almost seemed agitated because she had to complete the assignment. The student rarely interacted with her teammates when observed. During the interview, this student made the following comments:

- There didn't seem to me a educational point to it.

- I was bored.

- My teammates were stupid and I didn't want to work with them.

- It needed to be more difficult.

- The vocabulary help provided made it too easy.

- Anybody with any intelligence could do this, and I'm not sure they have to learn

    anything.

This student has extensive language acquisition experience and that many elements of

Latin 1 are designed for the beginning language learner. While it would also be easy to

disregard her answers, the researcher considers her criticism valid. It is possible for a

student to enter the first level of a new language as an experienced and confident

language learner. The researcher plans to use this student's feedback to make future

versions of Latin 1 better for similar learners. *Operation LAPIS* would seem to provide

an excellent opportunity for differentiation that can be explored in future action plan

cycles. This will be discussed in Chapter 5.

Journal entries are not included in this section, as they seemed forced and

provided less rich data than the classroom observations and semi-structured interviews.

The future of journal entries will be discussed in Chapter 5.

Answering the Research Questions

All data examined in this chapter was collected with the goal of answering the

research question: To what extent does game-based learning impact student attitudes

toward Latin, language learning, and technology for 15 Latin 1 students in a suburban

high school? Based on the qualitative and quantitative data, the researcher can state that

Operation LAPIS had an overall positive effect on the attitudes of students toward Latin

and game-based education. Thirteen out of 15 students were positive in their assessment

of the course and the software. By the end of the research period, the mean (out of 5) on

a question regarding students planning to take Latin 2 was 4.27. This was up from 3.87

at the beginning of the study. All items related to learning Latin via a game-based

method and possessing positive attitudes toward Latin had a mean over 3.7 and increased from the first administration of the survey. The only mean that decreased was a question that indicated favoring traditional instruction over game-based instruction. The statistics indicate that students in this study had a favorable impression of using the iPad for collaborative, game-based learning and this resulted in a positive affective environment in the classroom.

The qualitative data supported the quantitative data regarding attitudes. This is important due to the concept of polyangulation. The quantitative data informs regarding the students' perceptions of the game and curriculum. The qualitative data provides the researcher's analysis of what happened and what was said in the classroom. If there were differences, the action researcher looked for reasons for the discrepancies. In this case, however, the majority of students had positive things to say about the course, game-based learning, and their futures in Latin. The researcher noted a number of positive conversations about the game during observations of student groups. Overall, a positive event occurred in this classroom during the research period.

The results of this data point toward a number of possibilities for future instruction. The defined problem of practice for this study involved implementing a plan to use personal technology devices to the best of their ability. The initial cycle of this research study indicated that the school could move to a digital, game-based curriculum with no detriment to student attitudes toward the course. The evidence indicates that this group of students enjoyed game-based learning and felt that it augmented their study of the language. Based on the desire to make Latin 1 a positive experience for all students, it appeared that a traditional textbook is still necessary to serve the needs and learning

styles of some students. It would be interesting in a future research cycle, however, to augment *Operation LAPIS* with a digital textbook. This will be discussed further in Chapter 5.

Conclusion

The purpose of the data analysis conducted in this chapter was to answer a research question based on a problem of practice and purpose of the study. The problem of practice was the issuing of iPads to students and teachers in the research study's district with limited training provided on the educational utility of the iPad. This results in the iPad being used ineffectively by teachers and students as a replacement for notebooks or for gaming. The purpose of the study is to determine a method by which the iPad may be used effectively in Latin 1 classes at the suburban high school that hosted the study. Based on the problem of practice and purpose of the study, the research question is: To what extent does game-based learning impact student attitudes toward Latin, language learning, and technology for 15 Latin 1 students in a suburban high school?

In order to answer the question, qualitative and quantitative data was collected over a nine-week period. The qualitative data was used to measure student attitudes toward game-based learning and Latin, with a specific emphasis on the opinion of females toward a collaborative game. After collection, data was coded according to the themes of attitude, achievement, and gender. Coded data was then divided into positive and negative feedback. This data allowed the researcher to confidently answer the portion of the research question about student attitudes. The researcher then used quantitative data to polyangulate the findings of the qualitative data. The data found in

Tables 1, 2, and 3 demonstrated that students, overall, enjoyed *Operation LAPIS* and were encouraged to continue their study of Latin.

The district and the school involved in the study established a culture that promotes the use of technology by students and teachers. At the middle school level and above, all students are issued iPads for educational use. Limited training is offered, however, on using the iPads for effective educational purposes. The results of this study indicate that students want to use technology in their classes and that they will react favorably to teachers and classes that utilize iPads. The study also indicates, however, that each instructor needs to conduct regular action research to ensure that the use of technology is not only popular, but also an effective tool in teaching students. Technology, entertainment, and educational value create a positive affective environment for learning.

CHAPTER 5

SUMMARY, ACTION PLAN, & CONCLUSIONS

Introduction

This action research study addressed the problem of practice of ineffective use of iPads in the classroom at a school that provides all teachers and students with an iPad. Instead of using iPads as electronic notebooks, music devices, or game systems, students (and teachers) need a way to successfully implement the potential of the iPad in the classroom. This led the researcher-practitioner to wonder: to what extent does game-based learning impact student attitudes toward Latin, language learning, and technology? The purposes of the study were to measure and document the impact of game-based learning on the affective domain for a Latin 1 class and to determine whether the affective impact varied by gender.

In order to investigate this research question, the researcher practitioner developed a mixed methods study to measure and document the impact. A Likert scale (quantitative) was employed at the beginning, middle, and end of the study to measure student perceptions regarding game-based learning and its impact in the language classroom. The researcher then used the qualitative methods of classroom observations, semi-structured interviews, and student journals to polyangulate the findings from the Likert scale. It was hoped that the student perceptions would be matched by the findings in the classroom observations, interviews, and journals.

The quantitative evidence indicated that students enjoyed the game-based learning aspect of the course and that it produced a positive affective environment in the classroom. The means for all items related to game-based learning and the enjoyment of language learning increased over the course of the study period while items related to traditional instruction and textbooks decreased. The data also found the females enjoyed the game-based learning a bit more than the males in the class. This finding relaxed fears outlined in the Literature Review (Chapter 2) that females may not perform as well on games in the classroom.

The qualitative data supported the quantitative data. Classroom observations indicated that students were engaged by the game and enjoyed playing it to learn Latin. Conversation heard and documented further supported this claim. Evidence gathered from semi-structured interviews with each of the participants also reinforced the concept that the students enjoyed the games and had a positive outlook on Latin and language learning because of the experience. The student journals were collected and read, but were not used as evidence since other data seemed richer and less forced.

The researcher-practitioner found that *Operation LAPIS*, a game-based Latin 1 curriculum, had an overall positive affective impact on 15 Latin 1 students in a southern suburban high school. The game-based curriculum had a positive effect on both males and females, satisfying the social justice aspect of the study. Action research, however, does not end with a single cycle of research.

Key Questions

This study left the researcher-practitioner with three key questions involving game-based learning. First of all, he wondered if the affective impact led to an academic

impact (i.e. an improvement in Latin interpretive proficiency). As students advance in the affective domain, they internalize material to a greater degree because they have an emotional attachment to learning (Bloom, Krathwohl, & Masia, 1973). The researcher expects that there would be an academic impact, but it would have to be defined and measured to know for sure. This study originally contained research regarding academic improvement due to game-based learning, but it was dropped to focus more thoroughly on the affective domain question. The question regarding academic performance, however, still needs to be answered. This will be addressed further when suggestions for future research are discussed.

The second question involves the two students who did not enjoy game-based learning and *Operation LAPIS*. As a teacher, it is my responsibility to provide quality educational resources to all students. What options should be provided for students who do not work well with cooperative, game-based learning? The male student who did not like *Operation LAPIS* did not like any other aspects of the course and could not tell the researcher what would serve his educational needs better. This is a student who struggled in all classes, and it may be difficult to find an answer for him. The female, however, was an honors student with high grades. She was the child of a military officer and spoke three languages. This student indicated that she was bored, she did not enjoy collaboration, etc. This student deserves as much academic attention as my other students, so it is necessary to consider options that can be provided for those who do not enjoy participating in *Operation LAPIS*.

The third key question references the affective benefit of *Operation LAPIS* for all Latin students. This action research study examined the perceptions of 15 Latin 1

students in a particular class. This small sample cannot represent all Latin students in the researcher-practitioner's classes, and it would be pedagogically irresponsible to base all future instruction on this limited number of responses. Therefore, the researcher-practitioner must ask what the perception of *Operation LAPIS* will be by future Latin 1 students.

Action Researcher

As one conducts an action research study, one cannot help but become a curriculum leader in the area being studied. Having completed the first cycle of this study, the researcher-practitioner feels that he has a degree of expertise in both data collection and analysis. This expertise comes, in no small degree, because of mistakes made during the first trip through the process (trying to collect too much data to answer too many questions, issues with confidentiality, etc.). Curriculum leadership is exhibited when the researcher uses new skills and knowledge to delve deeper into a problem faced in the classroom or school.

The researcher-practitioner faces many conflicts during the research process. First of all, he/she is likely to be a teacher in the classroom or school where the research is taking place. The researcher is an insider because he/she is a "full participant" in the classroom, defined a "fully functional member of the community" (Mertler, 2017, p. 96). This provides the researcher with the advantage of knowing his/her subjects well, but this knowledge may result in bias or loss of objectivity. The action researcher must be able to separate the research process from the normal day in the classroom and school in order to remain objective. This is critical, especially if surprising or negative data must be analyzed for the good of the study.

The action researcher also faces other hurdles when attempting to facilitate change in the classroom or school. A few years ago, he disagreed with the district's decision to move Latin to a proficiency-based grading scheme designed for modern spoken languages. He conducted a personal action research project and felt that he proved the grading system was wrong for Latin and that Latin students would actually be harmed by it. he was told, however, to follow the policy, learning that it is nearly impossible to effect change when others (specifically superiors) feel the opposite way about the change.

It can also be difficult to find the time to conduct action research due to time limitations as a teacher. This DiP is a result of many hours given to a doctoral program. When the researcher is independent of university supervision, it is going to take dedication to remain true to the iterative action research process. It is the researcher's hope that the friends and connections he has made during the doctoral program will help hold him accountable to the action research process.

The action researcher is also responsible for reciprocal reflection with participants in his/her study. This actually occurred for this study on May 26, 2017, when the action researcher met with his class/subjects to discuss the results of the study and to develop an action plan for the next year. The researcher walked the students through the process of the action research, explaining what he did at each step and presenting data as the plan unfolded. At the end of the presentation, the researcher asked if the students agreed or disagreed with the findings. The students unanimously agreed with the findings and proceeded to assist the researcher in developing an action plan for the 2017-2018 academic year.

Action Plan for Students

  The participants in the action research agreed that the findings of the action were accurate as presented by the researcher. The group was confident that game-based learning had a positive affective effect on the majority of students in the classroom and that females in the class performed well on a collaborative game-based activity. The first issue that had to be decided was the group to participate in the research cycle for the 2017-2018 academic year. The researcher proposed either beginning the project anew with another group of Latin 1 students to determine whether they reacted the same way to *Operation LAPIS* (key question 1) or to pursue the key question regarding alternate activities with the current group when it reaches Latin 2. The class voted 11-4 in favor of continuing as the subjects, and those who voted against the process agreed that they were willing to participate in the process. Two of the four who voted against continuing were the two who did not react in a positive fashion to *Operation LAPIS*.

  As a class, we then agreed that the key question (how do we replace *Operation LAPIS* for those students who do not benefit from it?) would become the research question for 2017-2018. Since Latin 2 will meet in the first semester, this project will take place from August-December 2017. The group then discussed the options for students other than *Operation LAPIS*. The group contributed several ideas, including Roman culture games on the iPad, competitive military games, and review games such as GoVocab. The female student said she would try some of them, but wanted the option of textbook review if she did not like any of them. We agreed that would be an option. The male student who did not enjoy *Operation LAPIS* had no comment about any of the options being discussed, although his opinion was sought numerous times.

Even though the researcher was not planning to ask for journal entries from any groups during the cycle, a student asked to discuss them. The student was honest and said that they felt like "busy work" and that very few people put effort into them. I had already sensed this when reading the set for the current research cycle. I agreed that journal entries would not be a part of this group's work or any future projects by this group. The group also agreed to complete a Likert scale at the beginning and end of the semester to measure perceptions during the second year of the course.

The action plan to conclude the 2016-2017 year and begin the 2017-2018 year is as follows:

- Summer (before school begins): provide the initial reports of the first action research project to district and school officials. Discuss the new cycle with the district's Director of Research to obtain permission and seek advice.

- August: Prepare and send home assent forms for each participant and guardian. Ask students to complete a Likert scale regarding their perceptions before activities begin in the course. Work with any students unsatisfied with *Operation LAPIS* to find a suitable replacement.

- September-November (on a consistent basis): Work with any students unsatisfied with *Operation LAPIS* to find a suitable replacement. Informally observe students as they complete activities in the game.

- December: Ask students to complete a Likert scale regarding their perceptions of collaborative game-based learning in the course. Conduct semi-structured interview with students regarding their perceptions. Review results with students.

Begin planning for the third cycle of research with a focus group comprised of experienced action research students.

Since a new semester will begin in January 2018, with a new group of Latin 1 students, the researcher-practitioner also chose to examine the third key question (the perceptions of other groups of Latin 1 students) during the next cycle. This research will follow the current action research study very closely, but journal entries will not be required for this group of students. The schedule of major events will be as follows (all dates are in 2018):

- January: Prepare and send home assent forms for each participant and guardian. Ask students to complete a Likert scale regarding their perceptions before activities begin in the course. Conduct systematic observations based on character groups within the game and gender.

- February: Conduct systematic observations based on character groups within the game and gender.

- March: Ask students to complete a Likert scale regarding their perceptions at the midpoint of the course. Conduct systematic observations based on character groups within the game and gender.

- April: Conduct systematic observations based on character groups within the game and gender.

- May: Ask students to complete a Likert scale regarding their perceptions at the conclusion of the course. Conduct systematic observations based on character groups within the game and gender. Conduct semi-structured interviews with all students.

- June: Share findings with students, parents, and other stakeholders. Plan for another cycle of action research collaboratively.

Action Plan to Share Results with Professionals

Mertler (2017) states that "action plans may consist of brief statements or simple descriptions about the implementation of a new educational practice; a plan to reflect on alternative approaches to addressing the problem; a plan to share what you have learned with others interested in the topic . . ." (p. 219). There will be a two-sided action plan in effect for the next cycle of action research related to this topic. The first will involve sharing findings with other educational professionals (especially Latin teachers) and the second will involve continued work with students at the researcher-practitioner's school.

Sharing results with other Latin teachers will be a districtwide process during the 2017-2018 cycle. On August 10, 2017, Latin teachers will hold an all-day meeting at a school in the district to discuss new curriculum requirements and to collaborate as the new school year begins. The researcher-practitioner plans to introduce *Operation LAPIS* to colleagues, share the results of the previous action research study, and demonstrate the operation and management of the game. The researcher-practitioner's district offers collaborative planning to teachers across schools during the 2017-2018 academic year on September 20, December 6, January 24, February 28, and March 21. These dates will be used to collaborate with teachers who choose to implement *Operation LAPIS*. The meetings will be beneficial for all involved, as the researcher-practitioner will likely learn as much from the success and mistakes of colleagues as they will learn from him. After the March 21 planning date, the teachers who are involved will agree to meet (either in

person or virtually) for a short meeting at the end of the academic year to discuss findings and the next cycle of *Operation LAPIS* in the district's classrooms.

The researcher-practitioner also plans to present findings to Latin teachers outside of his current school district. The Junior Classical League (JCL) in the researcher-practitioner's state meets twice per academic year, once in the fall and once in the spring. While sessions are mainly developed for student members, it is appropriate for the researcher-practitioner to hold a session for advisors (most of whom are Latin teachers in the state). The Fall meeting will be held November 4, 2017, at a major research university in the state. The researcher-practitioner plans to hold a workshop similar to the one presented to colleagues on August 10. It is unlikely that any teachers would institute the game in November, as it is designed to start at the beginning of the class. Teachers could, however, begin researching the game and examining its possibilities for their Latin programs. A similar workshop will be presented to the group at the Spring meeting on March 24, 2018. Interested teachers may be invited to participate in the researcher-practitioner's final meeting with teachers within the district at the end of the academic year.

Facilitating Educational Change

As an experienced action researcher with certification as a South Carolina principal (along with Latin certification), I hope to use action research to enhance the lives of students, teachers, and administrators through positive and progressive educational change. The business of education is different than it was 50 years ago, and methods must change to meet the needs of modern learners. This can be difficult in South Carolina for a number of reasons. There is a conservative element in the state that

believes teaching and learning has not changed, and that all traditional educational techniques work today. The conservative element also desires to "test teachers" by making test scores a major point in a teacher's evaluation. Many teachers, therefore, are spending a great deal of time fighting antiquated teaching methods and evaluation techniques that are unfair to them. Many schools in South Carolina (such as those located in the infamous "Corridor of Shame") do not have funding to support action research in their building and districts. They have to use their resources to support basic needs.

The University of South Carolina, as well as other institutions that support the action research Ed.D., is producing a generation of scholarly practitioners who can challenge the status quo through dedicated classroom (and building) research. These individuals can present evidence and techniques to help teachers, students, and administrators improve their educational experiences. Action research can be performed anywhere; most projects are free (such as this DiP) or can be funded with a small grant. It also cannot be overlooked that a generation of students are participating in reciprocal action research with their teachers. Perhaps members of this group of young men and women will become a cabal of educators who bring forth meaningful change in the next generation.

Summary of Research Findings

The major point of this study involved utilizing the instructional strategy of game-based learning to impact the affective environment of a Latin 1 classroom in a positive manner. The study also showed that females in this class enjoyed a cooperative, game-based curriculum.

There are a number of virtues to this study. First of all, one of the focuses is the affective domain. This is an area often ignored when studying Bloom's Taxonomy, as the cognitive domain dominates scholarship. The affective domain, fathered by Krathwohl, Bloom, and Masia (1964) has not received full attention in scholarship. A student's emotional state does impact how he/she learns, making the affective domain important to the educational process. This study demonstrates that game-based learning had a positive impact on the affective domain for this group of students.

The study is also important because it deals with the concept of technology in the classroom. As technology improves and advances, teachers are going to be responsible for implementing more modern tools into the classroom. These tools are often given to teachers with little or no explanation regarding how to use them to their best educational effect. This study provides teachers with a possible way to use technology (game-based learning) in various disciplines.

Finally, the study cares about educational outcomes for females, a group that is often overlooked. Many studies cited in the literature review discuss competitive games in the classroom and demonstrated that females often do not perform well on competitive games. The researcher has experienced this in his own classroom when playing competitive trivia games or board games. A cooperative game was chosen for this study to see if the females in this class would react to it in a positive manner. Women actually rated the curriculum slightly higher than men, so the social justice component of this DiP was a success.

Suggestions for Future Research

The results of this action research study only applies to this group of students. It would be interesting to determine if other groups of students in Latin 1 courses in other states/regions had the same reaction to *Operation LAPIS* while continuing to monitor the reaction of females to the game. Further research on the academic impact of *Operation LAPIS* (and other game-based learning programs) is also recommended. This could be accomplished through the comparison of interpretive proficiency data on specific assignments and assessments between groups that have used *Operation LAPIS* and groups that have not used it. An examination of the difference of means could determine statistical significance in this realm. Finally, further research on how to improve the use of the affective domain for students of all disciplines is needed.

Conclusion

During this cycle of the action research process, the researcher-practitioner found that game-based learning had a positive effect on the affective domain for a group of Latin 1 students in a large suburban high school. Since this is action research, however, the cycle of research must continue. Next semester, the same group of students will continue with *Operation LAPIS* in order to answer two key questions that developed from the findings and implications of the study. The cycle will continue if the new study raises more key questions, and the researcher-practitioner will continue to work collaboratively and openly with the participants to find answers to the questions.

Action research is cyclical and collaborative. It can turn any classroom or school into an academic laboratory that investigates areas of wonder on how issues can be improved or changed. Action research transforms the dedicated teacher into an objective

academic researcher and the students into subjects who collaborate on the process. Action research is a way to improve classrooms, schools, and school districts across the nation with teachers and students leading the way. It is an academic endeavor whose time has arrived, and this researcher-practitioner hopes that the students who are currently the subjects of action research become the next great generation of researcher-practitioners.

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APPENDIX A

LIKERT SCALE

Student Opinions about Latin and Gaming

My gender is:

Please complete the following questionnaire.

	1-Strongly Disagree	2-Disagree	3-Neutral	4-Agree	5-Strongly Agree
1. I am excited about Latin class.					
2. I am learning to read Latin effectively.					
3. I learn more from traditional instruction than from games.					
4. I feel comfortable playing the game with my group.					

5. I wish the game were individual-based rather than team-based.					
6. I am learning Latin from the game.					
7. I am learning Latin from traditional instruction.					
8. I am learning more Latin because of participation in the game.					
9. Participation in the game is easy.					
10. I plan to continue my study of Latin.					

APPENDIX B

CLASSROOM OBSERVATION

Field Notes

_____Date Day _____ of *Operation LAPIS* _____Time	
Observation	Preliminary Thoughts/Analysis regarding Observation

APPENDIX C

SEMI-STRUCTURED INTERVIEW

Semistructured Interview Guide

1. What were your overall impressions of *Operation LAPIS*?

   - What did you particularly like?
   - What did you dislike?
   - What could be done better, considering the platform?

2. What did you think about the cooperative aspect of the game?

   - Did you prefer leading or being a team member?
   - How would a competitive aspect affect your attitude toward the game?

3. What did you learn from *Operation LAPIS*?

   - Did you feel your time was well-spent in an educational sense?
   - What could the game teach better?
   - Was this a worthwhile supplement? Why or why not?

4. How did *Operation LAPIS* impact the way you felt about the course?

   - Are you more or less likely to take Latin 2 due to your experience?
   - How would you react if I told you *Operation LAPIS* would continue through Advanced Placement Latin?

5. Do you have anything else, positive or negative, to say about the experience?

- How could that have been improved?
- How could that be made even better?

APPENDIX D

PARTICIPANT CONSENT

8.15.2016

Dear Students:

I am a student in a graduate program at the University of South Carolina under the supervision of Dr. Kenneth Vogler.   As part of my graduate program, I must complete a project designed to improve teaching practices. This type of research is called "action research." This is basically a thoughtful review of my teaching practices. My study will focus on game-based instruction in Latin. If you would like to review the materials related to the study at any time, you are always welcome to do so.

Although I am using my classroom and students, this project will not interfere in any way with my day-to-day lesson planning and teaching, nor will it single out any students.

In addition to data that would normally be a part of instructional activities, I will collect student surveys and journals.

Any information that could identify individual students in this study, like all other student-specific information in my classroom, will remain confidential.

There are no risks involved in the participation of this study. The results of this study may be reported in professional settings or educational literature.

You have the right to refuse your participation in the study and/or withdraw yourself at any time without penalty. Your refusal to participate will in no way hinder your educational progress. Your consent and participation in this project are completely voluntary.

At the bottom of this letter, you will find a student permission form. Please sign and date this form and return it to me by August 17, 2016.

Sincerely,

Jason Blackburn

Please check as appropriate, sign, and date:

___   I am willing to take part in the study.

___   I do not wish to take part in this study.

_____

Student Name (please print)   Student Signature

_____

_____

                                                                    Date_____

APPENDIX E

GUARDIAN CONSENT

8.15.2016

Dear Parents/Guardians:

I am a student in a graduate program at the University of South Carolina under the supervision of Dr. Kenneth Vogler.   As part of my graduate program, I must complete a project designed to improve teaching practices. This type of research is called "action research." This is basically a thoughtful review of my teaching practices. My study will focus on game-based instruction in Latin. If you would like to review the materials related to the study at any time, you are always welcome to do so.

Although I am using my classroom and students, this project will not interfere in any way with my day-to-day lesson planning and teaching, nor will it single out any students.

In addition to data that would normally be a part of instructional activities, I will collect student surveys and journals.

Any information that could identify individual students in this study, like all other student-specific information in my classroom, will remain confidential.

There are no risks involved in the participation of this study. The results of this study may be reported in professional settings or educational literature.

You have the right to refuse your child's participation in the study and/or withdraw your child at any time without penalty. Your refusal to allow your child to participate will in no way hinder your child's educational progress. Your consent and your student's participation in this project are completely voluntary.

At the bottom of this letter, you will find a parent permission form. Please sign and date this form and return it to me by August 17, 2016.

Sincerely,

Jason Blackburn

Please check as appropriate, sign, and date:

___ I have read this explanation and agree that my child may take part in this study.

___ I do not wish for my child to take part in this study.

_____

Parent /Guardian name (please print)   Parent/Guardian signature

_____

_____

Date_____

APPENDIX F

GOOGLE SPREADSHEET