THE EFFECT OF GAME-BASED LEARNING ON VOCABULARY ACQUISITION FOR

MIDDLE SCHOOL ENGLISH LANGUAGE LEARNERS

by

Jeanette Marie Benoit

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

English language learners (ELLs) in America face huge challenges in middle school. Although many ELLs quickly assimilate into the American culture and develop their social language rapidly, they continue to struggle academically. One reason ELLs find themselves behind their native English-speaking peers is their lack of academic vocabulary knowledge. Vocabulary can be learned both implicitly with extensive reading and explicitly with direct and focused instruction. Research has shown that implicit vocabulary learning is not as effective with ELLs and the need for effective explicit learning strategies is apparent. This study revealed no statistically significant difference in academic vocabulary scores when a game-based curriculum was introduced compared to traditional workbook lessons. Because games are popular with adolescents in today's society, teachers should consider bringing this affinity for gaming into the classroom to increase academic learning and success.

Keywords: English Language Learner, academic vocabulary, game-based, games, gender

Dedication

To my parents

To Tom and Michelle Cabic, thank you for your love and support and instilling in me all that is good. To Fred and Ghislaine Benoit, thank you for your love and support, and for sharing your son.

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English to Speakers of Other Languages (ESOL)

Institutional Review Board (IRB)

Limited English Proficiency (LEP)

Measure of Academic Vocabulary (MAV)

National Center for Education Statistics (NCES)

VARGA (Vocabulary Acquisition Research Group Archives)

WIDA-ACCESS Placement Test (W-APT)

Wisconsin Center for Education Research (WCER)

World-Class Instructional Design and Assessment (WIDA)

CHAPTER ONE: INTRODUCTION

Background

The 21st century has brought many changes to education in America: increased

technology, more rigorous content, and an explosion of English language learners from around

the world (Meskill, 2005). In Georgia, the number of ELLs has grown from 70,464 in 2002 to

90,481 during the 2013 school year (U.S. Department of Education. Institute of Education

Sciences, National Center for Education Statistics [NCES], 2015a). The ELL population

continues to grow and is expected to double by 2050, and these English language learners will

continue to face huge challenges in America (Meskill, 2005). Not only will they have to learn

the most complex language in the world, they will also have to keep up with their English-native

peers learning the same rigorous content as their native peers (Meskill, 2005). One significant

area of concern for educators is academic vocabulary; students' lack of academic vocabulary

knowledge has continually been an obstacle to student success (Nagy & Townsend, 2012).

Academic vocabulary is "words that are not used in everyday conversation; these types of

vocabulary words are used to explain a concept, and are most often found in academic text"

(Kurzweil Education, 2014, para. 1). The Common Core Standards in Georgia have raised the

bar for academic vocabulary knowledge and application across the content areas; therefore,

teachers must find ways to make learning academic vocabulary more meaningful and effective

for English language learners. Westby (2015) broke academic language into two groups, general

academic vocabulary and content specific vocabulary, both of which should be explicitly taught.

Westby (2015) suggested teaching these vocabulary words in a progressive sequence from

passive receptive activities such as listening and reading tasks to active expressive activities

including speaking and writing assignments. English to Speakers of Other Languages (ESOL)

teachers can begin by teaching the general academic vocabulary to assist ELLs with academic vocabulary acquisition that will be most beneficial in all content areas. Coxhead (2000) specified this group of vocabulary in her Academic World List (AWL), which lists the 570 most frequently used word families in academia. Coxhead derived these words from a 3,500,000-word corpus, built from academic texts from the disciplines of science, commerce, law, and the arts. Understanding and being able to apply academic vocabulary words with rich meaning allows students to connect with a variety of words and concepts in multiple content areas.

Anderson (1971) saw the need for multiple diverse opportunities for students to connect with vocabulary and created games for use with first grade students to boost vocabulary acquisition. Anderson's (1971) research may have been the catalyst for game-based learning research when some significant gains were found using the games in her study. Since then, education has continually evolved with the advent of computers, increased technology, and educators looking for creative and effective ways to best reach the student population. Gee (2012), an expert on gaming and game-based learning, explained that academic language or specialist language can be learned through experience, action, and games. Gee (2007) outlined 36 principles found in video games that could positively affect educational practices. Many of these principles can be applied to all games used in game-based learning. First, games provide active and critical learning experiences as opposed to passive learning exposures (Gee, 2007). Learners commit to the gaming experience, take risks in a non-threatening environment, receive amplified output for the limited input necessary to play, learn content along with their own learning potential, experience much practice, have opportunities for intrinsic rewards, and experience ongoing learning (Gee, 2007).

Second language acquisition began receiving attention in the 1980s with research focused more on syntax and morphological features rather than vocabulary acquisition (Read, 2013). The small scope of research had yet to discover the processes associated with second language learning and the impact vocabulary acquisition had in second language learning. Meara (2002), a leading researcher in second language acquisition, noticed this lack in research and began extensive work in second language vocabulary acquisition research in 1980. Meara currently maintains the VARGA (Vocabulary Acquisition Research Group Archives), where an abundance of research has begun to accumulate on the topic.

In *Learning Vocabulary in Another Language*, Nation (2001) laid out four principles for second language vocabulary acquisition. Meara (2002) summarized it well in his book review.

First, learners acquire vocabulary from meaning focused input. Secondly, direct and explicit vocabulary teaching can also be of benefit to learners. Thirdly, vocabulary acquisition can be enhanced by tasks requiring learners to engage in productive activities. And, fourthly, real command of a vocabulary requires a high level of verbal fluency. (p. 395)

These four principles can be embraced with game-based learning where meaningful, explicit, interactive, and challenging games can forge new vocabulary acquisition. Additional research on this topic has shown significant benefits by using game-based learning for academic vocabulary acquisition and retention in other countries and academic levels (Hui-Chan & Chen, 2012; Taheri, 2014). Promoting academic vocabulary acquisition while teaching the English language to non-native English speakers will provide these students access to the curriculum. Game-based learning can be the key to increased success in academics for English language learners.

English language learners comprise of the most rapidly growing sector of K-12 school populations with enrollments increasing in most parts of the country (Enyinnah, 2014). English language learners are often hard to reach and even more difficult to teach, although through no fault of their own (Kelley, Lesaux, Kieffer, & Faller, 2010). Kelley et al. (2010) found that ELLs scored in the twentieth percentile for vocabulary knowledge and reading comprehension and continued to fall further behind their native English peers through high school. Middle and high school ELL students are likely to have had interrupted schooling, little or no English exposure, and possibly little or no parental academic support (Calderón, 2007). These issues compound the challenges teachers face in teaching ELL students the extensive academic vocabulary necessary for academic success. The ESOL teacher must find ways to reach these students to engage them in their own learning and assist them in academic vocabulary acquisition. ELLs need to catch up to their English native peers in order to lessen the academic gap that is so evident in schools across America and achieve academic success. Statistics show that students who fail to develop the necessary skills to reach their potential become disaffected, drop out of school, and settle for low paying jobs or are unemployed because they cannot access the necessary education for success (Calderón, 2007). Game-based learning could be one strategy that will assist teachers to reach and teach academic vocabulary to their students, giving these students greater access to their learning and academic success.

Problem Statement

English language learners are struggling in academia in middle and high school. One culprit is lack of academic vocabulary knowledge, which represents a significant amount of words in academic texts (Nation, 2001). The probability of acquiring an unknown word incidentally is about 15% for native speakers of English and often less for ELLs, so there is a

need for effective, direct instructional strategies for academic vocabulary acquisition (Carlo et al., 2004). Although many qualitative studies have been conducted and support game-based learning, little empirical research on the efficacy of game-based learning for vocabulary acquisition has been conducted with middle school students learning English in American schools. Nagy and Townsend (2012) suggested conducting studies with students in upper elementary and middle school rather than secondary and college level students in order to gain a better understanding of academic language acquisition at an earlier age, noting that language demands differ with each level of education. According to the Georgia Department of Education (2015), more than five percent of Georgia's students are enrolled in ESOL, and almost two percent of students in the district where this study was conducted are active ELLs. With these numbers continuing to increase, the researcher was interested in learning more about the possible benefits of game-based learning for academic vocabulary acquisition at the middle school level.

Additionally, research has been conducted using a variety of measurements for academic vocabulary conducive to the researchers' needs rather than using a standardized assessment that specifically measures academic vocabulary acquisition (Booth, 2014). Utilizing the MAV (see Appendix A) as a standard assessment for academic vocabulary acquisition can provide a clearer picture of whether game-based learning is an effective strategy for future educators to employ. Further, there is no empirical data on the benefits of game-based learning for academic vocabulary in middle schools in America for ELLs based on gender. This study determined if game-based learning affected both genders similarly or if a statistical difference was present when learning academic vocabulary through game-based learning and traditional methods.

Purpose Statement

The purpose of this study was to investigate whether game-based learning or a traditional method of learning academic vocabulary is more effective with English language learners in a middle school setting and to determine if there is any statistical difference in scores based on gender. Research is lacking evidence to support specific interventions as generalizable to academic vocabulary acquisition (Nagy & Townsend, 2012). This study sought to add quantifiable data to the field of vocabulary acquisition through game-based learning to support or counter the hypothesis that game-based learning is a viable intervention or strategy for teaching academic vocabulary to English language learners in American middle schools.

Another limitation found in research is the divergent needs of English language learners at different proficiency levels (Aguirre-Munoz, Park, Amabisca, & Boscardin, 2008). The game-based learning strategy seeks to be a one-size fits all, where all students can access the new vocabulary and interact with it sufficiently in an ESOL classroom to effectively learn the meanings and demonstrate understanding through application.

For the purpose of this study, the independent variable was the type of instruction: game-based learning and traditional methods of learning. Game-based learning included board games, computer and Smartboard games, and teacher created classroom games. Traditional methods included text, lists, worksheets, dictionaries, drill, and writing activities. The dependent variable was the scores on the Measure of Academic Vocabulary. The study was conducted with 60 middle school students enrolled in ESOL classes in a single, suburban public school district in northwest Georgia.

Significance of the Study

The significance of this study was to assist in filling the educational gap between ELLs and their English native peers in academic content areas. Researchers have surmised that direct instruction of academic vocabulary is necessary (McKeown & Beck, 2004; Ranney, 2012). Students require multiple opportunities to engage with academic vocabulary in a variety of contexts in order to increase vocabulary learning and comprehension. Nagy and Townsend (2012) explained that teachers must build motivation, background knowledge, and repeated interaction with academic vocabulary. According to Blunt (2006), all three studies that measured statistical differences between university level students using game-based learning versus traditional learning methods supported the notion that game-based learning is significantly beneficial to students. This study sought to reinforce or negate Blunt's (2006) findings as well as generalize his conclusion to include middle school ESOL students learning academic vocabulary.

The study also sought to add definitive research to the field of academic vocabulary instruction to ELLs. Currently, the locale of the study does not provide a set curriculum for ESOL teacher instruction. Teachers in the district are responsible for creating a curriculum that specifically addresses the unique needs of each ELL that aligns with the WIDA standards and reinforces standards being taught in the content classes. The researcher provided lesson plans and instruction to the teachers that participated in the study so the game-based and traditional methods were comparable in each classroom. Townsend's (2007) study on academic vocabulary acquisition with ELLs in an afterschool workshop setting provided motivating research which could be incorporated into a classroom curriculum. The same measure of academic vocabulary acquisition was used to further substantiate or contrast the effects from the use of innovative

interventions for direct vocabulary instruction with ELLs in a middle school setting. Townsend's (2007) study in California and this study in Georgia added to the generalizability of academic vocabulary acquisition through game-based learning even though Townsend classified the interventions as a workshop that included games along with other active and engaging activities.

Research Questions

The research questions for this study were:

RQ1: Do middle school ESOL students who actively participate in game-based learning show significantly higher scores on vocabulary acquisition assessments when compared to students who only participate in traditional text, list, and drill activities?

RQ2: Is there a difference based on gender when measuring scores on academic vocabulary acquisition assessments for students who participate in game-based learning or traditional methods of learning?

Null Hypotheses

The null hypotheses for this study were:

$H_0 1$: There will be no statistically significant difference in scores on vocabulary acquisition assessments, as measured by Measure of Academic Vocabulary, between middle school, ESOL students who actively participate in game-based learning and middle school ESOL students who only participate in traditional text, list, and drill activities.

$H_0 2$: There will be no statistically significant difference in scores on vocabulary acquisition assessments, as measured by Measure of Academic Vocabulary, between middle school ESOL students who actively participate in game-based learning and middle school ESOL students who only participate in traditional text, list, and drill activities based on gender.

Definitions

1. *ACCESS* – ACESS is an English language proficiency assessment created and maintained by Wisconsin Center for Education Research (WCER), the Center for Applied Linguistics and MetriTech (Georgia Department of Education, 2014).

2. *Common Core State Standards* - Common Core standards are standards that were developed and adopted by 45 states for K-12 instruction that provide a consistent framework to ensure all students have equal access and opportunity to master skills and prepare students for success beyond high school (Georgia Department of Education, 2015).

3. *English Language Learner (ELL)* - An English language learner is a student whose first language is not English; English language learner can also be referred to as Limited English Proficiency (LEP) or non-English speakers (Enyinnah, 2014).

4. *English to Speakers of Other Languages (ESOL)* - The ESOL program is an instructional program that began in 1985 to comply with Georgia School Law Code 1981, § 20-2-156; it is funded through the state of Georgia for eligible English language learners in grades K-12 (Georgia Department of Education, 2014).

5. *Measure of Academic Vocabulary (MAV)* - The MAV assessment is an assessment of receptive academic vocabulary knowledge presented orally to students to measure knowledge of academic words taken from Coxhead's (2000) Academic Word List, without confounding reading and writing in the assessment of knowledge (Townsend, 2009).

6. *W-APT* – The WIDA-ACCESS Placement Test is an English language proficiency entrance test given to new students who may be deemed as English language learners

and qualify for placement in ESOL services (WIDA, 2014c). The assessment was

developed by the Center for Applied Linguistics (WIDA, 2014c).

7. *WIDA* - A resource used by a consortium of 31 states, including Georgia, to promote

and provide tools necessary for the advancement of "academic language development

and academic achievement for linguistically diverse students through high quality

standards, assessments, research, and professional development for educators"

(WIDA Mission, 2014b, para. 2).

CHAPTER TWO: LITERATURE REVIEW

Introduction

More than 603 million people in the world speak English as a foreign or second language (Lewis, Simmons, & Fennig, 2015). According to the U.S. Department of Education (2015), there were 4.4 million English language learners enrolled in public schools in the United States during the 2012-2013 school year, which was nearly 10% of the school-age population, and this number will likely continue to increase. Learning English as a second language is necessary for students arriving in America because these students must successfully immerse into the American culture and successfully navigate through educational requirements. The English vocabulary is extensive with more than one million words and continues to grow and change daily with neologisms from the ever-evolving technological growth and cultural expansions in the world (Global Language Monitor, 2014). The astounding English vocabulary has triple the number of words than the German language and six times more words than the French language (Bromley, 2007). With this vast vocabulary, "nonnative English-speaking students suffer from the inability to retrieve specific vocabulary required to successfully fulfill academic writing tasks" (Jong, 2008, p. 3).

Typically, ELLs are two academic years behind native English speaking students in vocabulary (Biemiller, 2007). More than 70% of ELLs that were studied by Mokhtari and Sheory (1994) reported that a small or limited vocabulary was their chief weakness when reading academic English texts. This deficit in breadth and depth of vocabulary knowledge hinders reading fluency and comprehension, which in turn negatively affects learning (Carlo et al., 2004). Middle school vocabulary often presents a strain on ELLs' learning, as the demands of academic vocabulary increases during these years (Corson, 1997). According to Booth (2014),

understanding and applying English vocabulary is essential for ELLs to be successful in school; it is paramount to practice effective strategies for learning the vocabulary and in particular, academic vocabulary.

Incidental Vocabulary Learning

The importance of academic vocabulary is often underestimated, yet it is regularly encountered throughout a variety of disciplines. Students must possess the ability to interact with academic vocabulary both receptively and productively as they navigate through their middle years and beyond. Researchers have argued that there are two different ways to acquire vocabulary: incidental and intentional (Calderón, 2007; Carlo et al., 2004; McKeown & Beck, 2004; Soltani, 2011). Second language vocabulary acquisition can be learned incidentally by reading multiple texts and listening to the vocabulary used in context (Soltani, 2011). Krashen (1989) explained, "Comprehensible input alone can do the entire job for vocabulary [acquisition]" (p. 448). Receptive vocabulary learning is the foundation ELLs need before they can develop a productive vocabulary repertoire (Fernandez-Fontecha, 2014; Schmitt, 2008). This receptive learning is gained through listening and more importantly, reading (Nation, 2001). An extensive reading program could be advantageous enough to acquire adequate academic vocabulary and should be part of the ELL's curriculum, allowing sufficient receptive exposure to make significant gains (Soltani, 2011). ELL can infer meanings of new vocabulary through context clues, and through extensive reading, the ELL will have enough repeated exposure to the vocabulary that they will "develop a deeper and more accurate understanding of word meaning and foster vocabulary learning" (Soltani, 2011, p. 165).

Intentional Vocabulary Learning

Opponents of incidental learning for second language vocabulary believe there is simply not enough time to acquire the thousands of words that are necessary to know in order to be academically successful (Richards, 2010). In addition, researchers have concluded that only the already talented readers were skilled enough to infer meaning from text (Booth, 2014). This fact would exclude most ELLs. Jong (2008) found that repetition is critical for incidental learning of new words, but when more words in a text are unknown rather than the known, ELLs struggle to find meaning and comprehension. Studies concerning incidental vocabulary learning vary in their results, and they are not able to pinpoint precisely the recommended exposures to new vocabulary words in context (Rieder, 2005; Simmons & Kameenui, 2012). Waring and Takaki (2003) suggested more than 20 encounters may be needed for some words to become learned. Biemiller (2003) was concerned with the lack of vocabulary knowledge and its negative effect on reading success; Biemiller stressed the need for direct vocabulary instruction rather than incidental acquisition and found the method the teacher employed was not as important as the actual teaching of the vocabulary. Biemiller also agreed that the amount of necessary vocabulary was too large to rely solely on incidental learning.

Explicit and direct instruction of academic vocabulary can foster better learning than incidental vocabulary learning (Coxhead, 2000). Coxhead (2000) suggested that students focus on explicitly learning academic vocabulary from the Academic Word List (AWL), which is non-domain specific, to prepare for academia. Marzano (2004), a well-known researcher in the area of vocabulary teaching and learning, found students who had direct vocabulary instruction scored higher than those without explicit instruction. "Direct vocabulary instruction has an impressive track record of improving students' background knowledge and the comprehension of

academic knowledge" (Marzano, 2004, p. 69). Bromley (2007) agreed with direct vocabulary instruction and encouraged teachers to provide a variety of opportunities to connect new vocabulary to related words, analyze word structures, determine and recognize multiple meanings of words, and actively engage in vocabulary in authentic ways. "The goal of vocabulary instruction should be to build students' independent word learning strategies that can empower them for lifelong learning" (Bromley, 2007, p. 536). One strategy for explicitly teaching and learning academic vocabulary is through games.

Game-based learning is a relatively new concept for second language learning, and much can be learned from research focused on game-based learning in a variety of educational contexts. For this study, game-based learning is viewed through a postmodern worldview lens, where "Language and meaning are socially constructed" (Knight, 2006, p. 95). Knight explained this concept is one of the foundational concepts for postmodern education. It is the responsibility of schools to create a social environment where constructivism can flourish.

Theoretical Framework

Constructivism is one aspect of postmodernism, and game-based learning is based on social constructivism (Knight, 2006). Constructivism is based on three principles, "knowledge is constructed by humans, knowledge is conjectural and fallible," and "knowledge grows through exposure" (Knight, 2006, p. 96-97). Social constructivism "focuses on the importance of socio-cultural context in understanding what occurs in the world through social interaction and constructing knowledge" (Wu, Hsiao, Wu, Lin, & Huang, 2011, p. 271). Game-based learning through the social constructivist lens stresses the interaction among players and games, which are socially constructed as students construct new knowledge in a social setting (Wu et al., 2011). The learner uses his culture along with social contexts to make sense of the world (Finstad,

2010). Creswell (2013) added, "Multiple realities are constructed through our lived experiences and interactions with others" (p. 36).

Sociocultural Learning Theory

Social constructivism stems from a blend of Vygotsky's (1978) sociocultural learning theory and Piaget's (1950) constructivist learning theory and reinforces Dewey's (1897) educational philosophy of pragmatism that people learn through hands-on experiences. Vygotsky (1978), a renowned developmental psychologist, theorized that the influence of play on a child's development is massive. Vygotsky (1978) explained through sociocultural learning theory that learning is inherently social in nature and children can learn through activities in a social context with the use of mediating tools. Vygotsky (1978) wrote, "Play creates a zone of proximal development for the child. In play, a child always behaves beyond his average age, above his daily behavior" (p. 102). In 1997, Vygotsky summarized his socio-cultural findings:

> We can formulate the general law of cultural development as follows: every function in the cultural development of the child appears on the stage twice, in two planes, first, the social, then the psychological, first between people as an intermental [interpsychological] category, then within the child as an intramental [intrapsychological] category. (p. 106)

Constructivist Learning Theory

Piaget (1950) theorized that learning is a quest for knowledge, and students build their own learning through participation. Piaget (1950) also argued that students learn through a series of interrelated, interdisciplinary skills and objectives through individual and collaborative exploration. Constructivism emphasizes the interaction between the learner and environment. Constructivists believe humans create meaning rather than acquire it from interpretations of life experiences, and for learning to be successful, meaningful, and lasting, three crucial factors must

be present: activity, concept, and culture (Ertmer & Newby, 2013). Constructivist learners need information to be presented in a variety of ways, contexts, times, and perspectives (Ertmer & Newby, 2013). Woo (2014) explained that "Students use games to explore and ultimately construct concepts and relationships in authentic contexts. The concept of learning-by-doing comprises core constructivist principles that underlie game-based learning" (p. 293).

Pragmatism

Dewey (1897), a pragmatist long before social constructivism became a theory, wrote in his pedagogic creed that students are social beings and school is a social institution. Dewey (1897) continued, "Education, therefore, must begin with a psychological insight into the child's capacities, interests, and habits. It must be controlled at every point by reference to these same considerations" (Article One). Dewey (1897) understood the importance of social learning and reaching students where they are most comfortable. He believed in hands-on experiences and learning though play as an effective means of reflective learning (Finstad, 2010). In 2008, 97% of American teens between the ages of 12-17, reported playing games using computers, portable devices, consoles, or the internet (Lenhart et al., 2008). With the introduction of smart phones and tablets, nearly all American teens play games; therefore, it makes sense to focus on game-based learning in order to effectively reach today's students, giving them a way to connect learning to familiar contexts.

Second language acquisition theories are varied and, to date, no consensus has been agreed upon. For the purposes of this project, Vygotsky (1978), through sociocultural theory, emphasized that the social environment plays a significant role in language learning. Further, Gass (2012), a social interactionist, theorized the learner uses conversational interactions to build knowledge in a second language. Swain (2013) reinforced Vygotsky's sociocultural theory,

which blends cognition and emotion in social learning for second language acquisition, explaining both comprehensible input and output are required for successful second language acquisition. The second language students learn through a variety of interactions with other second language learners, native language learners, and teachers (Malone, 2012).

<div style="text-align:center">Related Literature</div>

Several themes emerged during the review of literature. The debate between implicit and explicit vocabulary instruction continues to promote further research, there is a growing trend toward game-based learning in many classrooms, and researchers have continued to experiment with game-based learning across content areas in a variety of settings in primary, secondary, and university levels. With the exponential amount of ELLs enrolling in schools across America, the focus must turn toward seeking strategies from recent research and applying effective strategies for increased academic vocabulary acquisition in ESOL classrooms.

The Need for Academic Vocabulary Acquisition

"If language structures make up the skeleton of language, then it is vocabulary that provides the vital organs and the flesh" (Harmer, 1993, p. 153). Wilkins (1972) further reinforced this quote by saying, "Without grammar, little can be conveyed, without vocabulary, nothing can be conveyed" (p. 111). Vocabulary is a critical component of language learning, and is "an essential part of mastering a second language" (Schmitt, 2008, p. 329). Padak, a vocabulary expert, explained, "There's a strong, statistical link between a person's vocabulary knowledge and students' comprehension ability; and there's a very strong link between these two and academic success" (as cited in Varlas, 2012, p. 1). Qian (1998) conducted a study with 74 ELLs and found a correlation between breadth and depth of vocabulary knowledge and reading

comprehension. Qian (1998) stressed the need for more attention on improving the depth of vocabulary knowledge in ELLs in order for them to be academically successful.

It is necessary to provide English language learners with multiple opportunities to be exposed to and to apply academic vocabulary in context, which will result in increased English language acquisition (Georgia Department of Education, 2012). With the increasing number of students entering schools in Georgia who speak a home or primary language other than English, teachers must look for effective strategies to reach these students, assisting them in both social and academic language acquisition. The World-Class Instructional Design and Assessment (WIDA) Consortium (2012) created standards that focus on both social and academic language in all content areas. "English language learners communicate for Social and Instructional purposes within the school setting"… and "communicate information, ideas and concepts necessary for academic success in the content areas of Language Arts, Mathematics, Social Studies, and Science" (WIDA, 2012, p. 3). The state of Georgia has adopted the WIDA standards, and teachers must find the best strategies to implement these standards in the ESOL classroom.

Researchers and educators have generally acknowledged three tiers of vocabulary. Tier one consists of every day words that are used in conversation and is the first step in acclimating students to American English. Tier two words are general, academic terms that students will need in order to be successful in school. Finally, tier three words are content-specific and must be addressed in context with the specific content area. For the purposes of this study, the researcher will focus on tier two words to afford greater opportunities for students to build their academic vocabulary. As Lesaux, Kieffer, Kelly, and Harris (2014) stated, "Building academic vocabulary-words that appear frequently found in texts across academic disciplines, but rarely

occur in oral conversation-is one promising route for improving struggling adolescent learners' academic outcomes" (p. 1160). Coxhead (2000) created the Academic Word List (AWL) that lists the 570 most commonly used words in academic texts that are not frequently used in conversation. The list is broken into word families of 60 words each. These words are believed to be vital for students intending to pursue education beyond high school (Hyland & Tse, 2007). Jong (2008) asserted the AWL is critical for ELLs to learn due to high occurrence of these words in academic text. Jong (2008) further argued these words are imperative for ELLs to comprehend, because as they progress through their secondary education and beyond, they will be expected to function similar to their native English-speaking peers with reading academic texts, writing reports, and participating in class discussions about specific academic content. Academic vocabulary also plays a major role in analyzing content and is necessary for students to communicate effectively in higher educational settings. As the rigor continues to increase, it is imperative to introduce academic vocabulary before high school. Kelley et al. (2010) maintained "To ensure that students enter high school able to handle the sophisticated texts, academic vocabulary instruction should be incorporated into standard practice" (p. 5).

Academic vocabulary is more challenging to learn than social language and vocabulary because "it is more specific and sometimes abstract, making it difficult to grasp" (Sibold, 2011, p.24). In one case study, the teacher-subject found that ELL students, both new and long-term, had difficulty understanding the academic content because of complex vocabulary, constructions, and rhetoric (Baecher, Artigliere, Patterson, & Spatzer, 2012). Building academic language is necessary for ELL students to access the content in all academic courses. Brown (2007) proposed that lack of tier two, academic vocabulary words stems from ELLs' deficiency of background knowledge, vocabulary, and the ability to access the rigorous content from texts.

Brown also explained that academic vocabulary takes between five to seven years to acquire proficiently. The general consensus is that ELLs can require up to seven years in an academic setting to become fully proficient in academic English (Townsend, 2007). ELLs require multiple opportunities with academic vocabulary to discover, understand, and apply their learning in all academic contexts. Incorporating multiple learning strategies including metacognitive, cognitive, and social/affective will result in greater academic vocabulary acquisition (Ansarin, Zohrabi, & Zenali, 2012).

Middle school learners present their own challenges. Adolescent ELLs must cope with "shyness, mistaken beliefs about the consequences of making errors, fear of sounding foolish, and the difficulty of learning a new language" (Halpern, 2001, p. 744). They begin to transition from learning to read to reading to learn, and specifically, ELL's lack of vocabulary knowledge begins to affect comprehension of academic texts (Booth, 2014). ELLs also see a marked difference in vocabulary range and conceptual development that begins to rapidly increase around age 10 when compared to native English students (Corson, 1997). With the gap widening during young adolescence, the need for increased focused vocabulary instruction becomes critical.

A few notable research studies found preteaching vocabulary before reading helped ELLs in reading comprehension and overall academic vocabulary development. Wang (2005) studied 99 Chinese students in a university setting and gave both groups specific vocabulary instruction, one before reading and the second after reading. Wang (2005) found the group with the focused vocabulary instruction before reading outperformed the group that had the focused instruction after reading when given pre and posttest. The notion of preteaching academic vocabulary

before ELLs encounter it in texts should be considered in all ESOL classrooms including middle school classrooms, not only at the university level.

Silverman (2005) conducted another study that supports vocabulary instruction as a prerequisite to literacy. Silverman (2005) found that ELLs begin school behind their peers when it comes to vocabulary development and the trend continues throughout the school years with little progress as the texts increase in complexity each year. Silverman's (2005) focus on kindergarten ELLs and their lack of vocabulary understanding indicates that vocabulary instruction is important from the beginning of each ELL's educational journey. Focused direct vocabulary instruction with multidimensional and analytical practices are more effective in helping ELLs develop their vocabulary repertoire rather than relying on indirect learning or rote memorization of definitions (Silverman, 2005). This pedagogical methodology is effective with elementary students and further research in higher grades could add to this existing body of knowledge.

O'Hara and Pritchard (2008) explained that academic vocabulary development is an essential element that must be addressed to improve middle school ELL students' literacy. Today's literacy challenge is even more complex, as it no longer just involves reading, writing, speaking, and listening, but to be considered truly literate in today's society, one must also be able to think critically, reason logically, and use technology (O'Hara & Pritchard, 2008). O'Hara and Pritchard's (2008) study addressed academic vocabulary learning using student-created hypermedia projects that incorporated traditional flashcard and definition strategies with visual and graphic components that brought the learning to a higher level of thinking while incorporating technology. They found the students were motivated by being given freedom to choose their hypermedia path, as it allowed students to go at their own pace, lessened frustration

with new academic vocabulary encounters, and promoted connections of prior knowledge to new academic vocabulary (O'Hara & Pritchard, 2008). This hypermedia project favors increased technology, multiple opportunities for engagement with new vocabulary, and less frustration, all notable outcomes for academic vocabulary acquisition.

Gender Differences in Language Learning

In casual conversations, the gender debate usually ends with parties agreeing that girls are better at learning language and humanities, while boys dominate in mathematics and sciences. The gender gaps for reading and writing have changed little over the last 30 years with girls scoring significantly higher than boys do at all grade levels (U.S. Department of Education, NCES, 2004). Research on gender differences is difficult to disseminate because of so many confounding variables. Researchers debate whether there truly is a gender difference in learning abilities and academic achievement, or if the sexes just seem to prefer certain subjects or learning environments to others. Furthermore, researchers cannot agree whether gender plays a significant role in learning a second language, specifically English.

Gender differences of second language learning in French, Spanish, and German show that boys lack interest in learning a second language (Kissau, Kolano, & Wang, 2010). The current research suggests that boys do not find value in learning a second language and lack motivation due to a variety of reasons including classroom atmosphere, teacher relationships, attitude, and desire (Kissau et al., 2010). Students learning a second language in their native country may find learning the new language unnecessary, but students who immigrate to the United States must learn the English language out of necessity for survival. This alone should motivate both genders to desire to learn English and gain command of the English vocabulary.

Scarcella and Zimmerman (1998) detected a significant difference in gender during second language vocabulary development in university students. Their study revealed that males outperform females on the Test of Academic Lexicon when other factors such as length of time in America, Scholastic Aptitude Test scores, and age of arrival in the United States were similar (Scarcella & Zimmerman, 1998). Their study, however, could not single out the gender variable and prove that gender was the cause for the vocabulary developmental difference, because one must look at the amount and variety of opportunities given to ELLs for academic vocabulary development (Scarcella & Zimmerman, 1998).

Alavinia and Chegini (2012) found no significant difference in pretest and posttest scores based on gender for their control group when tested on vocabulary knowledge and acquisition, but when the experimental group used a scaffolded approach to task complexity, they found a significant difference in learning gains favoring females. This could promote the belief that there are language-learning differences by gender and suggest a scaffolded approach in the game-based learning environment.

Gender also plays a role in the types and amount of language learning strategies employed by the students (Nhan & Lai, 2012). Exercising multiple learning strategies increases English proficiency gains. Females tend to utilize more strategies, affording them greater language and vocabulary acquisition (Nhan & Lai, 2012). Teachers must look for ways to reach both genders by using a variety of strategies in order to bridge the language-learning gap.

On the contrary, research conducted by Blunt (2006) found no significant differences on academic achievement based on gender. Blunt's (2006) study focused on business and technology at a university rather than second or English language learning, but the findings that gender was not a predictor of academic achievement in business and technology specific

language is helpful for this study. Blunt's (2006) study did show significant gains of both

genders when game-based learning was implemented.

Similarly, content learning gains were found to be similar for both genders when game-

based learning was employed in an eighth grade science class "despite incoming disadvantages

for perceived skill and prior gaming experience" (Nietfield, Shores, & Hoffmann, 2014, p. 961).

In their study, Nietfield et al. (2014) analyzed scores from 130 students and found a small effect

size with a significant increase in posttest scores for the group that completed the game-based

learning unit ($n = 58$) compared to those that did not complete the game-based unit ($n = 72$). If

learning gains are similar for both genders in the area of science, more research must be

conducted to determine if game-based learning can increase learning gains for second language

vocabulary acquisition.

Fayyaz and Kamal (2014) suggested that even though the general belief is that females

outperform males in language gains, many studies show males score higher on receptive

language tasks than females. In their own study of 314 adult students, the data analysis revealed

a small significant difference in metacognitive listening abilities with the females outscoring the

males in planning evaluation, directed attention, and problem solving (Fayyaz & Kamal, 2014).

Yet, conflicting results from Fernandez-Fontecha (2014) found no significant difference in

receptive academic vocabulary achievement and no variation in motivation based on gender in

their study of 55 elementary students. The National Reading Panel (2000) explained that

academic vocabulary is most often tested through receptive language assessments for efficiency;

the results could vary significantly depending on whether the assessments are receptive (listening

and reading), or expressive (speaking and writing). More research is necessary to determine the

gender differences in middle school for learning English as a second language in the United

States, where mastery of the English language is critical for academic and life success.

Traditional Vocabulary Learning

Traditional teaching methodologies are teacher-centered, where the teacher is viewed as

the main source of knowledge and is responsible for transmitting new information to the

students, who are passive receivers of information. Scrivener (2005) described traditional

teaching methodology as the "jug and mug" (p.17); the teacher is the jug full of knowledge who

pours information into the empty mugs, filling students with new knowledge. Just being in the

presence of the teacher and actively listening is often enough to ensure learning is taking place

(Boumová, 2008). This direct instruction is followed by repetitive practice and drilling. The use

of literal translation from one's native language is often employed, and memorization is stressed

rather than application of the words in context. Traditional teaching and learning methods focus

on the written language, rather than incorporating the vocabulary in all four language domains:

listening, reading, writing, and speaking (Bromley, 2007). Traditional methods of learning

academic vocabulary involves a vocabulary list, looking up words in the dictionary, copying

down the definition, and using the new vocabulary words in a sentence (Bromley, 2007).

Teachers employ word lists, in-depth explanations, memorization drills, and vocabulary books or

worksheets to teach vocabulary in the traditional sense. Further, Richards (2010) explained

traditional methods include memorizing dialogues, question/answer practice, substitution drills,

and guided speaking and writing practice with emphasis on memorization of words rather than

the ability to apply the words in context and create new sentences using the vocabulary.

According to Bromley (2007), these methods ignore current research and theory and are simply

outdated. Teachers who use these traditional methods may not get the desired outcomes for

academic vocabulary acquisition. "Overuse of dictionary hunting, definition writing, or teacher explanation can turn students off learning new words and does not necessarily result in better comprehension or learning" (Bromley, 2007, p. 532). Another traditional approach is the vocabulary workbook where words are given in lists with a few activities printed for students to complete, or example sentences and definitions are given and students are required to simply match the words and definitions. The workbook approach may not provide a rich enough learning environment in which students can actively and repeatedly engage.

Not all traditional teaching methods for academic vocabulary acquisition are outdated; an example would be using text to introduce and develop meaning of new words. Kelley et al. (2010) used current scholastic magazines to give students experience with new words in context with familiar and relevant topics. The researchers specified this approach is not the only instructional method they employ, as students require experiences from multiple modalities (Kelley et al., 2010). There is plenty of research supporting the use of text to teach academic vocabulary in context, yet by limiting the teaching strategies to these age-old methods, teachers may not be as effective in reaching the adolescents of today. Language learning, especially academic language, must be meaningful and relevant and promote both receptive and productive communication.

Game-based Learning

A game is defined as, "a physical or mental competition conducted according to rules with the participants in direct opposition to each other" (Merriam-Webster, 2017). Games are fun and engaging, and have an intrinsic component that keeps people coming back to play. Game play has been on the increase for both boys and girls, and recent estimates say 99% of boys and 94% of girls engage in interactive gameplay (Joiner et al., 2011). With such universal

background knowledge of gaming, students can relate their gaming experiences to game-based learning activities in the classroom. Game-based learning is defined as an approach to learning with a type of game play that has defined learning outcomes; it is "designed to balance subject matter with gameplay and the ability of the player to retain and apply said subject matter to the real world" (EdTechReview, 2014, para. 1). It combines multiple learning strategies into an effective means of gaining, practicing, and applying new knowledge. It also enables students to work cooperatively, encourages participation and interaction, and promotes active learning. This learning strategy uses game-based mechanics, aesthetics, and strategies to engage learners, motivate action and interaction, and promote problem solving (Kapp, 2012). Game-based learning has been gaining attention over the past decade, but as of 2014, it is still just over the horizon and out of reach for most K-12 educators (Johnson, Adams-Becker, Estrada, & Freeman, 2014).

Finstad (2010) found instructional games are primarily used in elementary grades, yet the progression to include game-based learning in middle and high school has been slow in becoming recognized as effective learning tools. Barab, Gresalfi, and Arici (2009) performed numerous quantitative and qualitative studies regaling the benefits of game-based learning, and promoted game-based learning as a means for educating the youth of today. Shaffer, Squire, Halverson, and Gee (2005) described game-based learning as "personally meaningful, experiential, social and epistemological" (p. 105). Foreman (2003) stated, "Games expose players to deeply engaging, visually dynamic, rapidly paced, and highly gratifying pictorial experiences that make almost any sort of conventional schoolwork (especially when mediated by a lecture or text) seem boring by comparison" (p. 15). Game-based learning can create new and powerful ways for students to learn allowing them to play, think, and act ways that will prepare

them for meaningful experiences in our "postindustrial, technology-rich, real world" (Shaffer et al., 2005, p. 111). This statement relates well to the adolescent ELLs who are often too shy or are afraid of sounding foolish or making mistakes and the associated consequences (Halpern, 2001). Games can provide a safe and enjoyable environment for active learning.

Mifsud, Vella, and Camilleri (2013) conducted a study with a variety of stakeholders in education and found the majority support game-based learning, yet found that less than 10% of teachers implemented game-based learning into their instruction. Similarly, Sobhani and Bagheri (2014) conducted a survey that unanimously showed positive attitudes from teachers and students concerning game-based learning, and educators felt games were "learning lubricants," (p. 1066) helping to activate students' minds to learn and retain materials presented at a higher efficacy rate over traditional methods of teaching and learning.

Game-based learning could be an excellent strategy for ESOL teachers to implement for improved student academic vocabulary acquisition. Gaming encourages visualization, experimentation, and creativity through play, all which enhance learning (Amory, Naicker, Vincent, & Adams, 1999). Rondon, Sassi, and Furquim de Andrade (2013) found academic performance in mathematics was significantly higher with male English language learners when compared to English natives. This finding demonstrates the potential for improvement in ELL's knowledge and skills in academics. Hwang and Wu (2012) explained several quantitative studies have reported that educational computer games have increased motivation among students, yet the area of academic vocabulary acquisition for middle school English language learners is still in need of further research.

Language learning through gaming. Language cannot be first learned, then used. It can only be learned by using it. Krashen and Terrell (1983) studied second language learning

and provided four key implications for teaching a second language: the more comprehensible the input, the more aids provided for comprehension, the more speaking and listening activities, and the less anxiety and drudgery, the better. These four points allude to game-based teaching and learning. Games are an effective means for language learning and should be used at all stages of language learning development (Tuan & Doan, 2010). Games challenge students with goals to reach and rules to follow; they add an element of fun, and they can serve as an integral part of any language curriculum. Reinders (2012), a proponent of game-based learning for language acquisition, edited and contributed to a book that focused on language learning through game-based learning. Reinders (2012), along with 18 other experts in the field, explored the pedagogical potential of game-based learning and its benefits for language acquisition. Gaming forces students to actively participate in their learning while interacting with the language, peers, and content. Levine (2006) also pointed out the fact that games, more than books, movies, and music, force students to make decisions, an important component of learning.

Marzano (2009) concurred with incorporating games into explicit vocabulary instruction. Marzano's (2009) research of 24 elementary teachers who incorporated the six-step vocabulary instructional plan showed great results. Marzano (2009) concluded that engaging students in games that reviewed words in non-threatening ways produced a strong effect. This modern strategy also provides a safe place for students to practice and review word meanings, pronunciation, spelling, various forms of words, position in sentences, connotations, and collocations (Boumová, 2008).

A veteran teacher and researcher asserted that "a classroom should be an exciting place for learning, a place where students want to come and spend time and where teachers plan lessons that will motivate their students to achieve" (Ragatz, 2015, p.1). Ragatz (2015) noticed

that students are video/instant, and this technology native generation is learning in different ways. Ragatz (2015) studied gifted fifth graders using intentional, instructional games that aligned to the curriculum for academic vocabulary acquisition. Ragatz (2015) found game-based learning for vocabulary acquisition increased students' motivation to learn and increased overall awareness of target vocabulary in literature. In addition, students retained their learning from the games and could apply their learning in context (Ragatz, 2015).

Participants in a study conducted by Anyaegbu, Wei, and Yi (2012) reported that they preferred game-based learning to traditional instruction for second language learning. Many researchers have studied university English language learners to determine the effectiveness of game-based learning for vocabulary acquisition. One such study used non-digital games and found that games in general helped with vocabulary acquisition and retention (Hui-Chan & Chen, 2012). Vahdat and Behbahani (2013) also studied English language learners aged 23-27 using a control group with traditional teaching methods and an experimental group that used a serious game to learn the same new vocabulary. The researchers found that video game learning produced significantly higher scores over traditional learning methods (Vahdat & Behbahani, 2013).

Al-Sharafat and Abu-Seileek (2012) studied web-based games with fifth grade English as a foreign language students in Jordan. They found significant gains in reading and writing skills and higher retention of vocabulary with their experimental group when compared to the control group who received traditional instruction (Al-Sharafat & Abu-Seileek, 2012). The online games included context, word searches, synonyms and antonyms, and recognition

Taheri (2014) studied video game-based learning with 32 female elementary students and found similar results; motivation, engagement, and retention of vocabulary were higher in the

experimental group that used game-based learning for vocabulary acquisition. Taheri (2014) concluded that game-based learning was beneficial for learning English as a second language.

An interesting study was conducted with business professionals who desired to learn English as a second language to increase their marketability in the international business arena (Escudeiro & Vaz de Carvalho, 2013). The researchers used serious games to study motivation and engagement of business professionals learning the English language and global customs, which are deemed necessary for successful business ventures. They found the games were especially useful and provided professional, real-life situations and interactions that promoted increased motivation and engagement (Escudeiro & Vaz de Carvalho, 2013). With the positive results of this study, the researchers suggested reaching universities and higher institutes to improve teaching methodologies to include game-based learning (Escudeiro & Vaz de Carvalho, 2013). The study, although aimed at older participants, supports language learning through games and adds to the body of research that promotes game-based learning.

Gender differences in gaming. Gaming participation has evolved over the years. It was predominantly male-oriented in the late 20th century but is becoming more gender balanced in the 21st century. With this shift, it is imperative to research the impact of this transformation in gaming demographics on game-based learning to better reach today's students. Toro-Tronconis and Mellström (2010) analyzed gender effects in game-based learning and found there were no significant differences in attitudes and both genders perceived game-based learning as enjoyable and beneficial to their learning experience.

Robertson (2012) explored gender differences in educational gameplay and warned that teachers must be gender sensitive when employing game-based learning in the classroom. The games must be appropriate and generally acceptable for both genders for all students to have

equal opportunities to learn (Robertson, 2012). The games must be accessible to both genders in terms of skill necessary and ability to navigate through the games. According to Robertson (2012), boys prefer more challenging competitive games, whereas girls prefer to be more social with less conflict. Providing a mildly competitive gaming environment where each student feels safe and free from stress will entice both genders. Games can offer competition between teams that are equally distributed, or games that allow students to compete against themselves will be more productive for both genders. If the gaming activities are appropriate for both males and females, there will be similar learning gains for both genders.

       A variety of games for learning. According to Kinzie and Joseph (2008), "Children love to play games and are highly motivated to engage with them" (p. 643). Games are part of play with rules and objectives. Through play, students are involved in the game, giving them the opportunity to increase knowledge and develop skills necessary for academic success. They can be categorized into six activity modes: "active, explorative, problem-solving, strategic, social, and creative" (p. 643). Each category offers educational benefits for middle school students and each game type can be utilized in an ESOL classroom.

       Foil and Alber (2002) explained that for effective vocabulary acquisition to occur, students must be able to link new words to background knowledge, create meaningful and relevant contexts for new vocabulary, and frequently practice using the new vocabulary through a variety of means. They suggested a multitude of traditional games including flashcards, response cards, pantomiming, and other guessing games (Foil & Alber, 2002). Repeated exposure through a variety of games provides copious opportunities to interact with the vocabulary, allowing for greater vocabulary acquisition. Sibold (2011) suggested two board games as well as interactive games that the teachers can modify according to the needs of their

students. Wells and Narkon (2011) also recommended vocabulary games that supplement instruction and support comprehension of new vocabulary and related content. Word sorting and Bingo-type games are two examples that Wells and Narkon (2011) suggested that provide effective exposure and practice for students due to the high repetitive nature of the games. Tuan (2012) encouraged a variety of games to create a fun and relaxed learning environment where students can focus on team building and collaboration while subconsciously learning academic content. Gaming encourages language development along with increased engagement and enjoyable learning experiences (Tuan, 2012). Additionally, game-based learning stimulates both receptive and expressive language usage.

Townsend (2009) created an afterschool language workshop for middle school ESOL students to assess whether or not learning through a variety of games would improve their academic vocabulary acquisition. Townsend (2009) blended digital games with board games and teacher created games to teach a group of ESOL students new academic vocabulary. The study found a statistically significant benefit with a medium effect size of using the workshop with a variety of game-based activities and indicated that students with lower proficiencies can benefit from game-based learning.

Apperley and Beavis (2011) wrote an article based on a three-year study focused on game-based learning in secondary classrooms. Their review of literature encouraged the use of digital game-based learning in education because the students can relate to it, and because it provides a dynamic learning environment. Sylven and Sundqvist (2012) are also proponents of digital game-based learning. They explained that students already have an aptitude toward digital games and found a positive correlation between playing digital video games and second language English proficiency in their research subjects (Sylven & Sundqvist, 2012).

Digital games have begun to gain popularity in K-12 classrooms. Trivia, interactive gameboards, alternate reality with quests and missions, and other genres encourage students to learn through a variety of methods, including "drill, puzzle, exploration, logic, etc." (Prensky, 2001, p. 196). Zheng, Young, Wagner, and Brewer (2009) studied a virtual reality game intended for English language learning and found students increased their participation as the game evolved which led to higher language learning gains.

Additionally, Sadeghi and Dousti (2013) touted the remarkableness of technology and its "supremacy over almost all aspects of human beings' life" and its pervasive effects on the world (p. 14). Their study consisted of 111 participants with beginning English proficiency that ranged from 16-32 years of age. The significant results of the experimental, digital game-based learning over traditional learning methods had a large effect size. This study shows promise of generalizability toward younger students, many of whom are digital natives. The authors explained that technology is not a matter of if it should be used, but rather how it should best be used to further the educational goals of the society (Sadeghi & Dousti, 2013). Digital, game-based learning carries much potential for language learning; stimulating higher gains for student development and achievement.

Motivating students. Student attitudes and motivation to learn must be considered before implementing any new learning strategy. English language learners often lose motivation to learn English due to frustration and the overwhelming demands placed on them; they often lack resources that provide opportunity and experience both inside and out of the classroom (Meskill, 2005). Most of the literature discusses motivation as a major attribute of game-based learning. Miller (1992) found that games provide low-anxiety, high motivation, increased engagement, and optimal interaction. Both quantitative and qualitative studies have been

conducted measuring motivation as it relates to game-based learning. Both intrinsic and extrinsic motivation is linked to game play, which facilitates greater learning. Sadeghi and Sharifi (2013) explained that academic vocabulary acquisition requires multiple exposures, and games offer such opportunities while motivating and engaging students in deeper cognitive learning. Mayer, Warmelink, and Bekebrede (2013) studied student perceptions before, during, and after game-based learning and found student attitudes played a major role in motivation. The data proved significant results with a medium effect size. The researchers found that a quality teacher who could effectively implement game-based learning was key to motivating students.

Eseryel, Law, Ifenthaler, Ge, and Miller (2014) conducted an empirical study to determine the relationships among motivation, engagement, and complex problem solving while using a massive multi-player online game. The researchers concluded that motivation is positively related to problem solving with a small effect size and suggested that game designers must continually strive to develop highly motivational programs to keep students engaged and learning at continually higher levels (Eseryel et al., 2014).

In order to motivate and engage struggling students, a combination of extrinsic and intrinsic motivation is necessary. Elliot (2014) conducted a single case study where it was concluded that game-based learning was an excellent motivator for the case, an underprivileged student who struggled in school. Even though this study was not related to ESOL students, many ESOL students face the same hardships as other disadvantaged students. ESOL students are often economically disadvantaged, have little parental support, and lack educational role models at home.

Smith et al. (2013) studied English vocabulary learning of Chinese university students using games embedded into e-books. The students took pre-posttests to determine their vocabulary word knowledge. The experimental group used web-based text and computer games while the control group used hardcopy text, lists of words, and multiple-choice questions. The experiment used the same 57 students as the control and experiment group. Each participant completed four sessions; two with the eBook/game and two with traditional methods and was evaluated on their vocabulary and inference knowledge after each session using a posttest. There was a significant difference in posttest scores with the game-based e-book experimental group outperforming the traditional control group with a medium effect size. The students also completed a Likert-type questionnaire about their perceptions of the computer games. An interesting finding was that the participants embraced a higher level of challenge when playing learning games compared to rote memorization with paper-based texts. The researchers also found the e-books and games were higher motivators for learning when compared to the traditional methods.

Barrett (2012) studied the effects of different types of games including both quantity and quality-based questions and objectives in a mathematics class and was surprised to find that each type of game offered similar benefits. The students in her study reported increased motivation to complete tasks, higher on-task behaviors, and a common desire to compete with classmates (Barrett, 2012). Barrett (2012) also noted that games provide multiple desired learning opportunities such as discussion, problem solving, and scaffolding.

In addition to being highly motivating and entertaining, Muhanna (2012) found that games could lower anxiety in English language learners. Students feel more comfortable

experimenting with the English language in the relaxed atmosphere games afford. "In fact, games entertain, teach, encourage, and promote fluency" (Muhanna, 2012, p. 236).

Efficacy of game-based learning. Over the past decade, games have proven to add value to language learning. Learners generally perceive the classroom as a learning environment even though they are tasked with game play. This perception leads to higher learning gains (Vandercuysse, Vanderwaetre, Cornillie, & Clarebout, 2013). Additional preliminary research on this topic has shown significant benefits by using game-based learning for academic vocabulary acquisition and retention (Hui-Chan & Chen, 2012; Taheri, 2014). Many researchers have studied university English language learners to determine the effectiveness of game-based learning for vocabulary acquisition. One such study used non-digital games and found that games in general helped with vocabulary acquisition and retention (Hui-Chan & Chen, 2012). Vahdat and Behbahani (2013) also studied 40 young adult English learners aged 23-27 using a control group with traditional teaching methods and an experimental group that used a serious game to learn the same new vocabulary. Each group was subdivided by gender with 10 males and 10 females. The data revealed a significant difference in scores for the experimental game-based group for both males and females over the control group (Vahdat & Behbahani, 2013). Further results showed that the males outperformed the females in the game-based group (Vahdat & Behbahani, 2013). The researchers concluded that video games are beneficial for learning new vocabulary, especially with males (Vahdat & Behbahani, 2013).

Liu and Chu (2010) conducted a quasi-experimental study that focused on motivation and efficacy of a specific game-based learning program called HELLO. It was embedded in an English curriculum used in an 11th grade setting that taught English through an ubiquitous gaming environment. It encouraged collaboration, high levels of engagement, and context-rich

learning delivered through hand-held devices (Liu & Chu, 2010). The researchers found the game-based learning system supported their claim that games used for learning can result in higher student performance when compared with non-gaming methods of learning (Liu & Chu, 2010). Further, they conducted a survey that indicated students who participated in the game-based learning also reported to have higher learning motivation for attention, relevance, confidence, and satisfaction (Liu & Chu, 2012).

Another study compared non-game based online learning with serious game-based learning for the same course in American history (Hess & Gunter, 2013). The data revealed that the game-based learning took significantly longer, yet it produced significantly higher academic gains (Hess & Gunter, 2013). The researchers recommend a blend of both game-based and non-game based learning to reach the maximum potential of all students (Hess & Gunter, 2013).

The efficacy of game-based learning was further validated in a research study conducted with fourth grade students (Yien, Hung, Hwang, & Lin, 2011). The researchers found significant learning gains with the game-based learning strategy when compared to traditional learning strategies in a fourth grade nutrition class (Yien et al., 2011). This same research study also found no significant difference between genders in learning achievement, concluding that game-based learning is an appropriate tool that allows all students the opportunity to actively engage in learning (Yien et al., 2011).

The medical field also utilizes game-based learning to educate students. Rondon, Sassi, and Furquim de Andrade (2013) tested the efficacy of game-based learning as compared to lecture-type delivery models. Scores consistently revealed that game-based learning was more effective, leading the researchers to conclude that game-based learning lessens the working memory cognitive load on students enabling more effective learning to occur. These researchers

found that game-based learning afforded students the opportunity to develop cognitive skills, improve academic performance, increase engagement, promote satisfaction, and reduce stress while constructing new knowledge in a more fun, nonthreatening, and integrative way (Rondon et al., 2013). This study, conducted at the university level, sought to generalize the effects of game-based learning for all academic levels.

Gaming teachers needed. Teachers have the great responsibility of reaching students and finding effective ways of engaging students to promote higher learning. Teachers must use a variety of strategies to purposefully expose students to new academic vocabulary in order to aid students in accessing the curriculum. Game-based learning provides these opportunities for meaningful and relevant learning. Some advocates may feel that games are the most important element, but teachers must realize that they are the most important component of a successful game-based learning environment. The games cannot replace the expertise and personal connection teachers bring to the classroom. Cornillie, Clarebout, and Desmet (2012) focused on high school and university students learning English as a second language and found that students required explicit feedback from the teacher. The game designs offer excellent feedback, but the students still needed teacher feedback to remain focused, motivated, and challenged (Cornillie et al., 2012).

Another article supports the theory that teachers play an integral part in a game-based classroom. Razak and Connelly (2013) focused on primary school students in Scotland for their study. They discovered that game-based learning enhances the teacher's role in the classroom rather than eliminating their role as instructor (Razak & Connelly, 2013). Teachers need more professional learning in order to effectively implement game-based learning into their classrooms. Barrett (2012) cautioned teachers to thoroughly plan game-based lessons, ensuring

the goal is the development of skills and effective learning. Games should not be played only as a time-filler, reward, or break from educational goals. Teachers who decide to implement game-based learning must do diligent research to determine the most effective games to introduce to the students, ensuring the games promote learning. Wells and Narkon (2011) suggested designing instruction to include word games to increase student vocabulary acquisition. They warned that including games may take additional creativity, preparation, and decision-making, but the rewards in student engagement, motivation, and enthusiasm are significant (Wells & Narkon, 2011).

The positive results of the study conducted by Sadeghi and Dousti (2013) led them to urge teachers to take advantage of game-based learning¸ noting that games play a central role in teaching grammar. They also invited administrators to take a closer look at the benefits of game-based learning as an educational tool. Some of these benefits include: increased learning efficacy; stress-free learning environments; immediate feedback during gameplay; repetition, drill, and practice of essential language skills; student-centered learning; increased motivation; and an element of fun (Sadeghi & Dousti, 2013).

Finding the gaps. Academic vocabulary instruction, specifically through game-based learning is a weak area in research. The National Reading Panel (2000) was tasked by Congress to analyze research relating to reading with a subcomponent of vocabulary. The National Reading Panel (2000) found only 50 studies conducted solely for vocabulary purposes out of over 100,000, and of these 50 studies, the focus was on fourth and fifth graders, showing a gap in literature for middle and high school vocabulary instruction. In addition, the National Reading Panel (2000) found that these studies based most of the results on standardized testing rather than teacher-created assessments that focused specifically on vocabulary.

Summary

Although many quantitative studies have been conducted since 2000 and support game-based learning, most of these studies focused on university or adult English language learners or are not related to academic vocabulary acquisition and are focused on specific content areas. Much research on math, science, and social studies through game-based learning where virtual worlds were created and utilized for increased content learning have been studied. Specific games and game types that target academic words that can be generalized to multiple educational settings need more research. Rondon et al. (2013) did not find significant effects of game-based learning at the college level, but suggested further research in all classroom levels. The majority of literature that focused on middle school aged students and academic vocabulary acquisition discussed studies conducted in other countries where English is taught as a foreign language rather than a second language necessary for survival and success as is the case in the United States. Muhanna (2012) suggested further research to determine the effects of gaming on other populations. There is a need for further research on game-based learning for vocabulary acquisition with middle school students learning English in American schools. Sadeghi and Sharifi (2013) conducted their game-based learning study as a post-teaching activity rather than using games as a learning tool throughout the language learning process and suggested future research be conducted in this area. Another interesting gap in the research is that game-based learning is not generalized to include a variety of interactive games in the conducted studies. The research generally focuses on one specific commercial game designed for educational use, yet game-based learning can be broadened to include a variety of teacher-made, student-made, and commercial-made games. The variety would allow students to maintain a fresh perspective on academic vocabulary acquisition and would provide abundant opportunities for students to

engage with the words. With the increasing number of students enrolling in American schools, and in particular, the district in Georgia where the present study is being conducted, it would be beneficial to learn more about game-based learning for academic vocabulary acquisition in relation to gender differences and overall effectiveness. There is a gap in literature relating to game-based learning of academic vocabulary for English language learners in American middle schools. Game-based learning could be a significant tool for bridging the gap between ELLs and academic vocabulary. It could give ESOL students access to the curriculum while providing motivation and effective learning. Game-based learning could be the bridge English language learners need in the middle school environment.

CHAPTER THREE: METHODS

Design

The design of the study was a quasi-experimental static group comparison design. It was quasi-experimental because the research participants took part in an experiment relating to game-based learning, but the participants were not randomly assigned to the experimental and control groups (Gall, Gall, & Borg, 2007). This study was also a static group design for two reasons: "Participants are not randomly assigned to the two treatment groups; and a posttest, but no pretest, is administered to both groups" (Gall et al., 2007, p. 416). Stratified cluster sampling was used because whole classes were selected for the control or treatment group, which were naturally occurring groups in the population, rather than simple random sampling of individuals. The classes were selected for either the control or treatment group based on student proficiency levels and gender to ensure the participants in the population were evenly represented. This cluster sampling allowed the teachers to implement the control variable, traditional learning, and the experimental variable, game-based learning, with ease in separate class periods.

The main threat to the internal validity of a static group comparison design has been that "posttest differences between groups can be attributed to characteristics of the groups other than the experimental conditions to which they were assigned" (Gall et al., 2007, p. 416). Because this design could produce a weaker experiment, students were equally distributed by proficiency level according to their latest ACCESS scores. ACCESS is a secure, large-scale test given annually to students who are identified as English language learners in Georgia to determine English proficiency according to the social, instructional, and academic language standards set forth by WIDA (WIDA, 2014).

Additional extraneous variables that could have affected the internal validity of the study include the history of the participants and compensatory rivalry by the control group. First, the groups were located at different schools and in different grade levels, so each group was unique in its routines and prior exposure to academic vocabulary. The participants came from varied backgrounds that may or may not have stressed academic vocabulary learning. The researcher attempted to minimize this threat by choosing research assistants who promoted academic vocabulary literacy and were committed to following the outlined procedures for the study. The research assistants and participants in the control groups may have felt a compensatory rivalry with the treatment group, performing beyond their normal level because they wanted to compete with the other groups. All participants were aware of the study, and by nature, may have wanted to please the researcher and assistants. The researcher attempted to minimize this threat to validity by not allowing the assistants to use the assessment as a grade and by excluding the researcher's students from the study.

External threats to validity included population validity and ecological validity (Gall et al., 2007). The sample studied for this research was from a specific and relatively small district where the population of ESOL students is relatively small. The generalizability of the results may be limited. The researcher was interested in finding viable methods for teaching academic vocabulary to a limited population with specific English language learning needs. Generalizing research findings to a larger population is risky; therefore, the threat to population validity was present. The researcher attempted to minimize the threat by delineating critical details in the research procedures.

The Hawthorne effect is another threat to external validity. According to Gall et al. (2007), "The Hawthorne effect refers to any situation in which the experimental conditions are

such that the mere fact that individuals are aware of participating in an experiment, are aware of the hypothesis, or are receiving special attention improves their performance" (p. 390). The researcher sought to minimize this threat by training the research assistants and by providing all materials necessary to complete the study. The teachers who volunteered to participate were treated equally and no compensation was given. The researcher monitored the lessons and ensured the research assistants carried out the study as planned. Because the control and treatment groups were located in different schools, the students did not have the opportunity to speak with each other about the treatment or control activities.

With this stratification and equal distribution of participants in both the control and treatment group, the researcher was able to ascertain stronger inferences concerning the effect of the game-based learning treatment compared to the traditional learning control group. The researcher chose this design because the proficiency levels could act as a pretest to control for variances without pretest sensitization. If the same test was given to the participants in both the treatment and control groups as a pretest and posttest, the pretest sensitivity could inadvertently affect the outcome of the posttest (Gall et al., 2007). The researcher was especially concerned with determining if the outcome of a specific treatment, game-based learning, was statistically different from traditional methods of teaching vocabulary.

Research Questions

The research questions for this study were:

RQ1: Do middle school ESOL students who actively participate in game-based learning show significantly higher scores on vocabulary acquisition assessments when compared to students who only participate in traditional text, list, and drill activities?

RQ2: Is there a difference based on gender when measuring scores on academic vocabulary acquisition assessments for students who participate in game-based learning or traditional methods of learning?

Null Hypotheses

The null hypotheses for this study were:

$H_0 1$: There will be no statistically significant difference in scores on vocabulary acquisition assessments as measured by Measure of Academic Vocabulary, between middle school ESOL students who actively participate in game-based learning and middle school ESOL students who only participate in traditional text, list, and drill activities.

$H_0 2$: There will be no statistically significant difference in scores on academic vocabulary acquisition assessments as measured by Measure of Academic Vocabulary, between middle school ESOL students who actively participate in game-based learning and middle school ESOL students who only participate in traditional text, list, and drill activities, based on gender.

Participants and Setting

Sixty participants for this study were drawn from a convenience cluster sample of middle school students during the spring semester of the 2015-2016 school year. The participants were middle school ESOL students taken from a population of students located in a suburban district in Northwest Georgia. The school district serves over 28,000 students, with roughly 2% of those students served in ESOL classes (Education.com, 2014). The district has been considered middle-class with a median household income of approximately $62,000 annually, while 11% of the district lives below the poverty level (U. S. Census Bureau, 2014). The district has nine middle schools, all of which provide ESOL services. The participants consisted of 60 English language learners enrolled in ESOL middle school classes. According to Faul, Erdfelder, Lang,

and Buchner (2009), the developers of the G*Power data analysis software program, the number

of participants ($N = 60$) met the recommended minimum for a sample size at the .05 alpha level

for a medium effect size with statistical power of .76. This lessened the likelihood of Type I and

Type II errors. Participants were enrolled in grades six through eight and spoke a language other

than English as their primary language or home language according to their Home Language

Survey. The native languages of the sample included Spanish (n = 44), French (n = 5), Creole (n

= 4), Russian (n=4), Chinese (n = 2) and Gujarati (n = 1). Over the past three years, the number

of ESOL students in the district increased from 469 to 543, and this trend will likely continue.

Participants with native languages other than English, including those listed above, participated

in the study because they met the requirements for enrollment into or continuation of the ESOL

program.

These students were chosen for two reasons. First, because the researcher works at the

middle school level and works cooperatively with the all ESOL middle school teachers, the

researcher could plan and control the independent variable of treatment versus control group.

Second, prior research indicated that ELLs have difficulty with academic language in middle

school, and the researcher wanted to find effective methods of teaching academic vocabulary to

ESOL students. The students had little or no knowledge of most of the academic vocabulary

prior to the research study.

Convenience cluster sampling was used to investigate the research question in order to

gather data from a select group of students and to accurately represent the ELL population in the

participants' school district. All of the participants qualified to be in the study based on their

ACCESS scores that determined placement and continuation in the ESOL program. ACCESS is

a secure, large-scale test that addresses the English language development standards that

represent the social, instructional, and academic language, which is necessary for students to communicate with peers, educators, and the curriculum in schools (WIDA, 2014).

All participants had parental consent, and participation in the study was voluntary (see Appendix B). Sixty-eight students were asked to participate in the study, and 60 students completed the study after they returned signed parental consent and student assent forms. The sample was representative of the ESOL learners in the district. Six teachers agreed to assist the researcher and facilitated the study in their classes. Once the consent and assent forms were returned to the researcher, the researcher assigned teachers to one of the two groups based on the gender and proficiency levels of their students. WIDA assigns one of three proficiency levels based on the composite score of the ACCESS to each student (WIDA, 2016). Tier A students are beginning English proficient students, Tier B students are considered intermediate learners, and Tier C students are advanced English proficient (WIDA, 2016). The control group consisted of 31 students (3 Tier A, 9 Tier B, and 19 Tier C), while the treatment group consisted of 29 students (3 Tier A, 7 Tier B, and 19 Tier C). This stratification and distribution allowed the researcher to balance the control and treatment groups for a more similar distribution. Gender was also distributed similarly with the control group consisting of 22 boys and 9 girls, while the treatment group consisted of 19 boys and 10 girls. The researcher used the class rosters to determine the gender of the participants before the groups were selected for treatment or control. This stratification allowed the researcher to assign participants to a group for a more even distribution.

The study began during the second semester of the 2015-2016 school year, which gave plenty of time for the students to acclimate to the environment before the study began, and the study lasted for six weeks. The researcher provided all materials for every student and instructed

each teacher how to implement the experiment. In addition to providing instructions, the

teachers were provided with lesson plans to follow, and the researcher consulted with the

teachers weekly to ensure the lessons were implemented according to the plans. Three teachers

taught two classes with the control variable, traditional learning materials, while the other three

teachers facilitated the treatment variable, game-based learning activities. Six classes were

treated as the treatment group, and six classes were considered the control group. Both the

control group ($n = 31$) and the treatment group ($n = 29$) attended ESOL classes as a scheduled

class or pull-out from the general education classroom that specifically focused on social and

academic vocabulary necessary for success in middle school. The classes used the WIDA

standards as a guide to instruction, incorporating Georgia Common Core Standards in each

subject area.

Instrumentation

The first instrument used in this study was the ACCESS. This assessment measures

English proficiency in terms of the six WIDA language proficiency levels ranging from entering

to reaching (WIDA, 2016). The tier corresponds to the students' estimated position on the

English language acquisition continuum: Tier A (Beginning); Tier B (Intermediate); or Tier C

(Advanced) (WIDA, 2016). The Overall Composite proficiency score is calculated based on

responses in the four domains of Listening, Speaking, Reading, and Writing. It is the score

calculated to determine gains and represent a student's overall English language proficiency

(CAL/WIDA Partnership Activities Psychometrics/Research Team, 2014). The WIDA

consortium report for 2012-2013 test administration indicated the reliability for grades six

through eight using Cronbach's alpha as .925 (CAL/WIDA Partnership Activities

Psychometrics/Research Team, 2014). Cronbach's coefficient alpha is used to determine

internal consistency and is commonly used as an estimate of reliability. As Warner (2013) indicated, "Cronbach's alpha has become the most popular form of reliability assessment for multiple-item scales" (p. 931). The ACCESS is administered online and consists of multiple choice, short answer, and extended oral and written response items. Figure 1 below shows sample items from the ACCESS for grade cluster six through eight. These items are taken from the listening and writing domains; questions are differentiated after each response is given to accurately assess English proficiency tiers and levels.

https://www.wida.us/assessment/access/access_sample_items.pdf

Figure 1. Sample Items for ACCESS

The second instrument used in this study was a modified vocabulary knowledge scale called the Measure of Academic Vocabulary (MAV) (see Appendix A). The test instrument was developed and used by Townsend (2007) during research of academic vocabulary and middle school English language learners, and it proved to be reliable and valid. After a pilot administration of the MAV, Townsend (2007) reported the reliability coefficients for forms A and B using Cronbach's alpha, respectively, were .82 and .87. The correlation coefficient for the two forms was .91. In Townsend's (2007) study, students were shown and read 60 target words from Coxhead's (2000) Academic Word List (AWL). According to Coxhead (2000), The AWL identifies the most commonly found words in academic texts. This study utilized the first 30 target words from the MAV. The students self-reported their answers to the following prompts: I have never seen this word, I have seen this word but don't know what it means, I have seen this word and think it means ___, and I know this word and can use it in a sentence. Students either wrote or dictated a sentence under this prompt. Raw scores obtained had a maximum value of

90. This instrument was appropriate for this study, because, like Townsend (2007), the

researcher was interested in determining if a specific treatment affects vocabulary acquisition

differently than the control.

For the first hypothesis, the independent variable was the type of instruction with two

groups. The experimental group used game-based methods for vocabulary instruction, while the

control group used traditional methods for vocabulary instruction. Table 1 shows a description

of the strategies used for the independent variable. The dependent variable was the vocabulary

scores as measured by the MAV posttest. For the second hypothesis, the independent variable

was gender, with two groups, male and female, while the dependent variable was the vocabulary

scores as measured by the MAV posttest.

Table 1

The Independent Variable: Game-based vs. Traditional Learning Activities

Game-based	Traditional
Flashcard Memory Match Game	Define the words using dictionary or discussion
Vocabulary Pictionary	Read words in sentences (useinasentence.com)
Smartboard Games:	Write sentences using each word
-Speed Word Match -Team Word Quiz	Crossword and word search worksheets
-Soccer Goal Words -Word Biz	Matching and fill in the blank activities
Heads Up on iPad	Repeat words and definitions (Drill)
Vocabulary Bingo	
Scrabble	

Procedures

After conducting a comprehensive review of literature, the researcher found a gap

relating to game-based learning of academic vocabulary for English language learners in middle

schools. The research questions, "Do middle school ESOL students who actively participate in

game-based learning show significantly higher scores on vocabulary acquisition assessments when compared to students who only participate in traditional text, list, and drill activities," and "Is there a difference based on gender when measuring scores on academic vocabulary acquisition assessments for students who participate in game-based learning or traditional methods of learning" were identified. The next step was to draft a proposal and submit for approval by the dissertation committee. After the committee approved the proposal, the researcher submitted the proposal to the Institutional Review Board (IRB) for approval. The researcher secured IRB approval for conducting the experiment in a suburban school district in Georgia (see Appendix C). The researcher also formally obtained approval from the participating school district and each school principal to conduct the study. The researcher explained the study to the teachers and students. The researcher presented the study to the ESOL teachers in the district during a department meeting and offered middle school ESOL teachers the opportunity to volunteer to participate in the research. Once the teacher volunteers responded affirmatively, the researcher confirmed with each teacher volunteer and scheduled a training session. Parental assent forms were sent home to each student in each of the participating classes. The letter and attached assent form explained that participation in the study was voluntary and assent was needed from parents because the students were minors. Students also signed a consent form if they were interested in participating in the study.

Next, training was given to teachers to ensure each teacher would instruct the participants according to the experimental and control group plan. The teachers were provided with all lesson plans with explicit directions for implementation of both the experimental and control groups. Each lesson plan outlined the order of activities, directions for each activity, and a timeframe for each activity. All testing and instructional materials needed for both groups were

supplied to ensure accurate data would be gathered. The researcher, to ensure the experiment

was conducted properly, performed periodic observations. The classes were held daily for 50

minutes in an ESOL classroom, and each grade level attended a separate class for ESOL

instruction. The control group ($n = 31$) consisted of ELLs that were instructed with traditional

methods of text, memorization, and drill using pen and paper in the connection class setting for

approximately 30 minutes, three days each week. Computer, Smartboard, iPad, traditional

gameboards like Scrabble and Pictionary, and teacher-created, hands-on interactive games that

focus on the target academic vocabulary was presented to the students in each experimental

group three days per week for approximately 30 minutes. The teachers had flexibility to decide

which days they would focus on the new vocabulary. Six new academic words were introduced

each week from the Academic Word List (Coxhead, 2000). Posttests (MAV) were administered

following the 6 week study.

   Once all posttests had been administered and gathered, the researcher analyzed the data.

The statistical significance of observed differences in the mean scores of the treatment and

control group was tested using an independent samples t-test in order to support or reject the first

hypothesis. The second hypothesis was tested using a separate independent samples t-test using

the posttest scores of the MAV and the demographic information provided by the teachers for

gender. All analyses were conducted using IBM's SPSS and G*Power 3.1 software. Results

were analyzed and reported following all APA guidelines.

Data Analysis

Before analyzing the data, descriptive statistics were computed. Assumptions were

validated first, then the data were analyzed from the raw posttest scores of the Measure of

Academic Vocabulary. It was assumed that participants in the study were independent of each

other, meaning scores of one person did not affect scores of another person. The normality

assumptions were tenable. A histogram of the frequency distribution for the outcome variable,

vocabulary acquisition posttest scores, showed normality. The Kolmogorov-Smirnov test was

used to confirm the result because the sample size was greater than 50 ($N = 60$), and the

Kolmogorov-Smirnov test for normality indicates tenability of the assumption when results are

non-significant (Rockinson-Szapkiw, 2013). Because the p value was greater than the critical

significance value of $p > .05$, it indicated the assumption of normality could be assumed

(Rockinson-Szapkiw, 2013). A Levene's test was conducted to verify the equality of variance,

or homogeneity. When the significance level for the Levene's test is greater than .05, it indicates

the assumption is tenable (Rockinson-Szapkiw, 2013). The effect size, using eta squared, is

medium with a sample size ($N = 60$), statistical power = .7, and alpha = .05 (Gall et al., 2007,

p.145; Faul et al., 2009).

After all assumptions were deemed tenable, the data were then analyzed using an

independent t-test for each hypothesis. The first hypothesis compared the dependent variable,

the mean scores from the Measure of Academic Vocabulary, with one nominal independent

variable with two groups (treatment and control). An independent t-test is used when "the

researcher's goal is to show that there is a statistically significant difference in mean score on Y

between the groups" (Warner, 2013, p. 185). In this study Y, the dependent variable, was the

MAV scores.

A second t-test was performed to determine if there was a statistically significant

difference in the mean scores of the MAV based on gender. An independent samples t-test was

the most appropriate test to analyze the scores of two different levels: males and females. The

categorical independent variable with two levels was gender, male and female, while the

continuous dependent variable was the posttest scores from the MAV instrument. The MAV instrument was considered a ratio measurement because it had an absolute zero, and scores can range from zero to 90. The assumptions found tenable were applied to the second hypothesis, and an additional normality test supported the assumption that the population distributions were normal. Again, histograms were created, and normality was assumed because there was a symmetrical, bell shaped curve present. To further verify the assumption of normality, the Kolmogorov-Smirnov test was utilized because the sample size was greater than 50.

Once all analyses were computed, the researcher drew conclusions that either supported or rejected the null hypotheses. The researcher was careful to document the results and report all findings associated with the research questions. Limitations and indications for future research were also discussed.

CHAPTER FOUR: FINDINGS

Research Questions

The research questions for this study were:

RQ1: Do middle school ESOL students who actively participate in game-based learning show significantly higher scores on vocabulary acquisition assessments when compared to students who only participate in traditional text, list, and drill activities?

RQ2: Is there a difference based on gender when measuring scores on academic vocabulary acquisition assessments for students who participate in game-based learning or traditional methods of learning?

Null Hypotheses

The null hypotheses for this study were:

H$_0$1: There will be no statistically significant difference in scores on vocabulary acquisition assessments, as measured by Measure of Academic Vocabulary, between middle school, ESOL students who actively participate in game-based learning and middle school ESOL students who only participate in traditional text, list, and drill activities.

H$_0$2: There will be no statistically significant difference in scores on vocabulary acquisition assessments, as measured by Measure of Academic Vocabulary, between middle school ESOL students who actively participate in game-based learning and middle school ESOL students who only participate in traditional text, list, and drill activities based on gender.

Descriptive Statistics

A descriptive analysis was conducted measuring the scores of the Measure of Academic Vocabulary with middle school ESOL students who actively participate in game-based learning and middle school ESOL students who only participate in traditional text, list, and drill activities.

Data were gathered from 60 ESOL students who participated in the study. The first set of

statistics reflects the groups divided for the first research question, specifically addressing the

two independent variables: 29 students in the game-based learning group and 31 students in the

traditional learning group. The range, mean, median, mode, and standard deviation for the

posttest scores of the Measurement of Academic Vocabulary are located in Table 2.

Table 2

Descriptive Statistics for Measurement of Academic Vocabulary Scores by Group

Group	*n*	*Mean*	*Median*	*Mode*	*Range*	*SD*
Traditional/Control	31	62.77	65.00	80.00	60	18.406
Game-based/	29	70.90	75.00	83.00	54	15.572
Experimental				85.00		

For the second research question, gender was the basis for discrimination of the nominal

variable. There were only 19 girls enrolled in ESOL during the time of this study, compared to

41 boys. There were a similar number of girls in each group during the study. The control group

consisted of nine girls (1 Tier A, 4 Tier B, and 4 Tier C), while the treatment group consisted of

10 girls (5 Tier B and 5 Tier C). Likewise, the males were also similarly distributed into the

groups. The control group consisted of 22 males (2 Tier A, 7 Tier B, and 13 Tier C), while the

treatment group consisted of 19 males (3 Tier A, 2 Tier B, and 14 Tier C). The descriptive

statistics in Table 3 show the groups segregated by gender.

Table 3

Descriptive Statistics for Measurement of Academic Vocabulary Scores by Gender

Gender	*n*	*Mean*	*Median*	*Mode*	*Range*	*SD*
Female	19	66.42	72.00	82	52	15.858
Male	41	66.83	74.00	80, 85	60	18.134

Results

Data Screening

Data screening was conducted prior to analysis regarding missing values, inconsistencies, and extreme outliers. There were no missing values on participant measurements, and the scores appeared consistent with each participant's English proficiency level. Students who were Tier A and B scored lower than those who are in Tier C according to the W-APT and/or ACCESS scores. Data remained anonymous with only tier (A, B, or C) and male or female (M or F) marked for each participant along with which group the data came from, traditional control or game-based experimental (T or G). Figure 2 shows the frequency of scores by group.
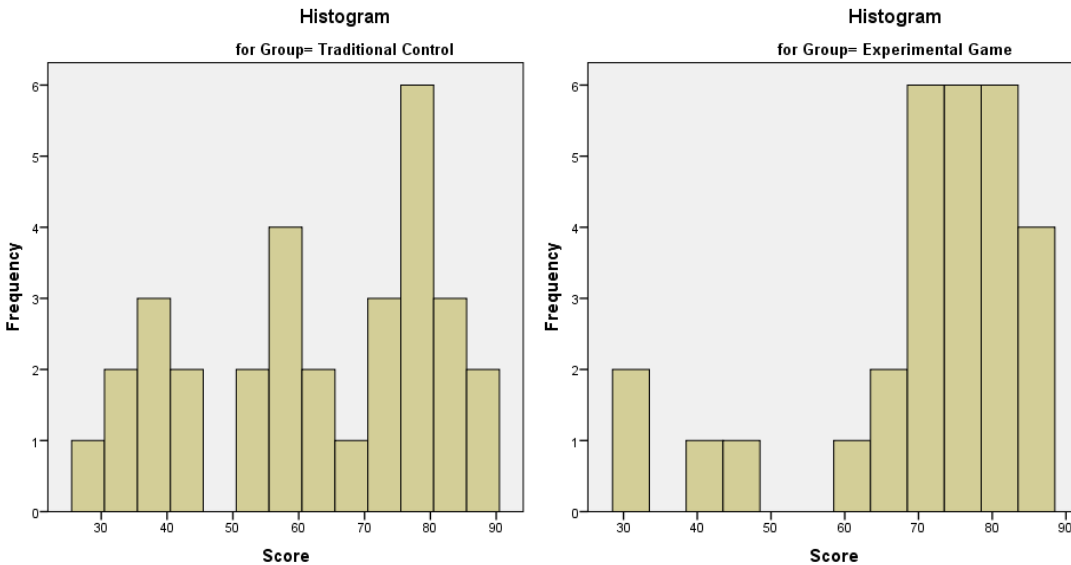
Figure 2. Histograms Showing Similarities of Scores on MAV by Group

Null Hypothesis One

Prior to conducting the *t*-test to analyze the first null hypothesis, the researcher performed assumption testing to validate various assumptions. First, the level of measurement was determined to be ratio data; therefore, a parametric test such as the independent *t*-test is appropriate for this statistic. Next, the researcher assumed random sampling; even though participants were placed in convenience cluster sample groups, each group was randomly assigned to either the control or experimental group. The researcher did not know any of the class groups or participants and assigned the groups based on the number of participants to ensure a more even distribution.

The independent observations assumption was held tenable as each participant was given a separate measurement and each answer was recorded only one time. The research assistants were explicitly trained to ensure this assumption would not be violated. The researcher performed a Kolmogorov-Smirnov test and validated the tenability of the assumption of

normality. Additionally, the researcher checked the assumption of normality by creating a histogram and looking to ensure the curve looked normal. Figure 3 shows the assumption of normality was tenable.
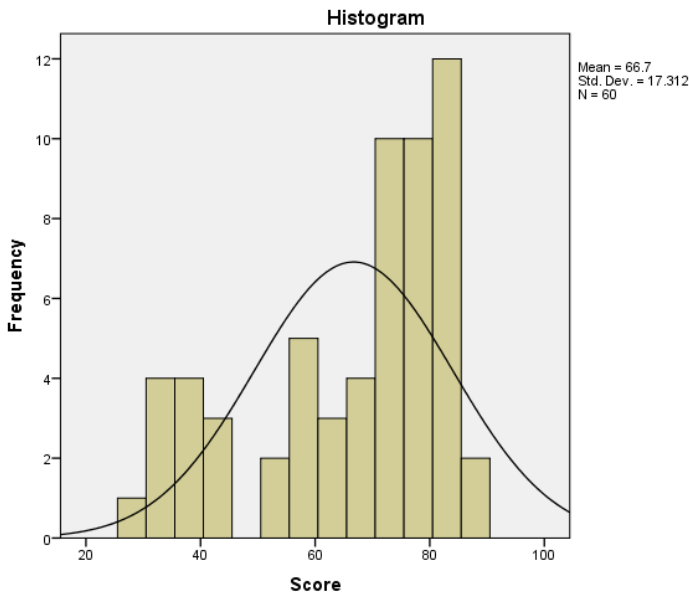
Figure 3. Normal Distribution of Scores

      Finally, the equal variances assumption is a required assumption for the *t*-test procedure to be valid (Rockinson-Szapkiw, 2013). To test for equal variances, a Levene's Test was performed. The significance level was 0.051, which is above the threshold of 0.05 meaning equal variance could be assumed (Rockinson-Szapkiw, 2013).

Table 4

Levene's Test for Equality of Variances

Variable	*F*	Significance level
MAV Score ($N = 60$)	3.966	.051

An independent *t*-test was used to analyze the first null hypothesis that considered the difference between the Measurement of Academic Vocabulary scores of middle school ESOL students who learned the vocabulary through traditional list, text, and drill activities, and those who learned the same vocabulary through game-based learning. Once the researcher deemed all assumptions tenable, an independent *t*-test was chosen to evaluate whether a statistically significant difference existed on scores between the two groups, traditional and game-based, as measured by the Measurement of Academic Vocabulary. The researcher chose a *t*-test analysis because it is most appropriate when evaluating two different levels: control and experimental. An independent *t*-test was performed using IBM SPSS Statistics Data Editor. The results were not significant, $t(58) = -1.853$, $p = .069$, $d = .50$, indicating there was no significant difference between the scores of students who participated in traditional methods of learning academic vocabulary ($n = 31$, $M = 62.77$, $SD = 18.41$) and the scores of students who participated in game-based learning activities for the same academic vocabulary ($n = 29$, $M = 70.90$, $SD = 15.27$). According to the G*Power analysis, the power for this analysis was .76, meaning there is a slight chance of a Type II error in reporting (Faul et al., 2009). The 95% confidence interval for the difference between means was -16.90 to .65. The researcher failed to reject the null hypothesis.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
score	Equal variances assumed	3.966	.051	-1.853	58	.069	-8.122	4.383	-16.896	.651
	Equal variances not assumed			-1.865	57.208	.067	-8.122	4.356	-16.844	.599

Figure 4. Independent t-Test for Equality of Means: Traditional and Game-based

Null Hypothesis Two

      An independent *t*-test was used to analyze the second null hypothesis that looked at the difference between the Measure of Academic Vocabulary scores of males ($n = 41$) and females ($n = 19$). The data from the same 60 participants from the first hypothesis were used to test the second null hypothesis. Figure 5 shows a boxplot of the score distribution by gender.
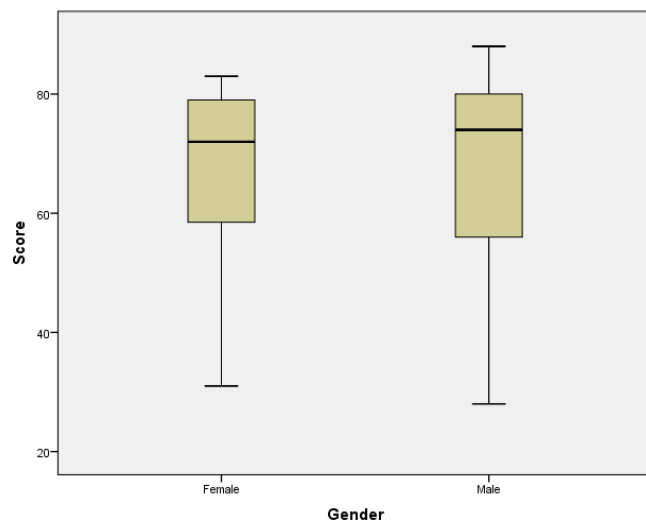

Figure 5. Score Distribution by Gender

      The levels of measurement assumption was upheld with a nominal independent variable, gender, and a ratio-scale dependent variable, MAV scores. The participants were not chosen randomly because convenience cluster sampling was used; however, random assignment of cluster groups occurred. Independent observations were assumed as the researcher took care to collect data, ensuring each participant was only asked each question one time, and no student shared any information during the assessment administration. The assumption of normality was examined using the Kolmogorov-Smirnov test. The assumption of normality, with a significance level set at .05, was violated with a significance of .000. There was a much higher population of male participants than female participants; however, this is consistent with the overall ESOL student population in the district. The *t*-test is robust over moderate violations of this assumption

when a two-tailed test is used with a sample size larger than 30 (Rockinson-Szapkiw, 2013). The

assumption of equal variances was evaluated using Levene's Test for Equality of Variance. The

test produced a significance level of .401, which is greater than .05, indicating the assumption

was tenable.

An independent *t*-test was performed using the IBM SPSS Statistics Data Editor to

determine whether a statistically significant difference exists between the mean scores on the

Measurement of Academic Vocabulary of males and females. The results were not significant,

$t(58) = -.084$, $p = .933$, $d = .5$, indicating there was not a significant difference of scores between

males ($n = 41$, $M = 66.83$, $SD = 18.13$) and females ($n = 19$, $M = 66.42$, $SD = 15.86$). The

observed power was .42 with a medium effect size, indicating a possibility of a Type II error.

The researcher failed to reject the second null hypothesis.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score	Equal variances assumed	.716	.401	-.084	58	.933	-.408	4.846	-10.108	9.291
	Equal variances not assumed			-.089	39.841	.930	-.408	4.610	-9.727	8.911

Figure 6. Independent Samples t-Test for Equality of Means of Scores by Gender

CHAPTER FIVE: CONCLUSIONS

This chapter discusses the findings from this study, provides a conclusion of the research, discusses the implications and limitations, and offers recommendations for future research.

With an increasing number of English Language Learners entering middle school, an effective learning strategy for developing academic vocabulary is imperative. Corson (1997) explained that understanding academic vocabulary, a set of abstract and often difficult to learn words, is important for academic success. Researchers agree explicit academic vocabulary instruction with multiple opportunities to interact with the language is necessary (Ranney, 2012; Townsend, 2007). The goal of this study was to determine the best strategy to implement for the greatest academic vocabulary gains. Game-based learning for the general school population was researched and found to be an effective learning tool, and the researcher sought to determine if this generality could be applied to academic vocabulary acquisition for middle school ESOL students (Barab et al., 2009; Gee, 2012; Shaffer et al., 2005).

Discussion

The purpose of this study was to investigate whether game-based learning or a traditional method of learning academic vocabulary was more effective with English language learners in a middle school setting and to determine if there was any statistical difference in scores based on gender. Two specific research questions guided this study:

RQ1: Do middle school ESOL students who actively participate in game-based learning show significantly higher scores on vocabulary acquisition assessments when compared to students who only participate in traditional text, list, and drill activities?

RQ2: Is there a difference based on gender when measuring scores on academic vocabulary acquisition assessments for students who participate in game-based learning or traditional methods of learning?

Data were collected from 60 participants using the Measurement of Academic Vocabulary (see Appendix A) following a 6 week study employing a traditional control group and a game-based experimental group.

The first null hypothesis, there will be no statistically significant difference in scores on vocabulary acquisition assessments, as measured by Measure of Academic Vocabulary, between middle school ESOL students who actively participate in game-based learning and middle school ESOL students who only participate in traditional text, list, and drill activities, was not rejected. An independent *t*-test was used to analyze the scores of the Measurement of Academic Vocabulary following a 6 week instructional period ($N = 60$). The analysis showed no significant difference between scores of students who participated in traditional learning of academic vocabulary and those who took part in the game-based learning classes.

While both groups made advances in learning academic vocabulary, the method of instruction and learning did not have a significant difference. This finding supports research conducted by McKeown and Beck (2004) that found any type of direct and rich vocabulary instruction to be effective. Additionally, this research sought to complement the existing body of literature on vocabulary instruction, specifically the effectiveness of incorporating game-based learning strategies over traditional teacher-led instruction with text, list, and drill activities (Miller, 1992; Townsend, 2007). This finding contradicts research conducted by Tuan (2012), who researched game-based learning and traditional workbook methods with vocabulary

learning in a Vietnamese elementary school and found game-based learning to have significant gains over traditional learning methods.

The researcher also failed to reject the second null hypothesis, there will be no statistically significant difference in scores on vocabulary acquisition assessments, as measured by Measure of Academic Vocabulary, between middle school ESOL students who actively participate in game-based learning and middle school ESOL students who only participate in traditional text, list, and drill activities based on gender. The independent samples *t*-test revealed no significant difference in scores based on gender, $t(58) = -.084$, $p = .933$, $d = .5$. This study does not support the findings of Alavania and Chegini (2012), who found gender to play a significant role in learner's performance of vocabulary acquisition; however, it does support the theory that outcomes were similar for both genders when game-based learning was employed (Netfield et al., 2014).

Conclusions

Results of this study led to two conclusions. First, the findings revealed that there was no statistically significant difference between game-based learning and traditional learning methods of academic vocabulary. Secondly, there was no statistically significant difference in scores based on gender. This provides reassurance to teachers who are looking for an innovative way to teach abstract vocabulary terms that game-based learning is an effective option. The scores on the MAV were similar in both the control traditional group and the experimental game-based group. Both the traditional and game-based groups benefitted from explicit, direct, and rich instruction of academic vocabulary with mean scores of 62.77 and 70.90 out of 90, respectively. This study supported McKeown and Beck (2004), who conducted extensive research and found

direct instruction of vocabulary to be necessary, and it effectively increased vocabulary knowledge of students.

This research also corroborated the findings of Townsend (2007) and contributed to the existing body of knowledge that indicated that research-based vocabulary instruction enhances the academic vocabulary development of middle school ESOL students. Both game-based and rich, direct instruction are viable strategies that should continue to be used in middle school ESOL classrooms for academic vocabulary acquisition.

Implications

The study implied game-based learning was as effective as learning with traditional strategies. Secondly, the findings revealed no difference in learning academic vocabulary based on gender. Even though game-based learning is still in its nascent stages in the educational arena, the National Media Consortium found that educators who support game-based learning recognize the potential to "stimulate large gains in engagement, productivity, creativity, and authentic learning" (Johnson et al., 2014, p. 38). This research added to the existing body of literature by showing game-based learning is as effective as traditional strategies.

This research also corroborated the findings of Townsend (2007) and contributed to the existing body of knowledge that indicated that research-based vocabulary instruction enhances the academic vocabulary development of middle school ESOL students. Townsend (2007) focused on an afterschool voluntary program that limited the findings to participants who were eager to learn new academic vocabulary, and had the means to participate after school hours, while this study sought to reach all ESOL students in middle school. By implementing this study during regularly-scheduled class periods, the students did not have to make any accommodations for transportation, nor were there any scheduling conflicts. With these advantages, this study

provided a broader population sample, which aimed to generalize the findings to a classroom setting.

Gender did not have a significant effect on learning academic vocabulary in either the game-based or traditional setting. This finding supports the notion that males and females acquire academic vocabulary similarly regardless of the learning strategy. With direct and rich exposure and multiple opportunities to engage and interact with the vocabulary, both genders can effectively acquire new academic vocabulary.

Limitations

One limitation of this study was the number of participants. The researcher provided parental assent and student consent forms to all middle school students and received permission from nearly half of the population. Because this study was conducted in one rural school district with a limited number of middle school ESOL students, the data were collected from only 60 participants. With the limited number of participants ($N = 60$), the power of the analysis was weaker than desired, leaving a possibility of a type II error of analysis.

This study was limited to one school district in a rural county in the southeast region of the United States. This district may not be representative of other districts in this state or nation, and therefore limits the generalizability of the findings to other districts.

Another limitation was the duration of the intervention. Nagy (2005) stated, "Effective vocabulary instruction is a long-term proposition" (28). With the transient nature of the ESOL population in this district, a shorter study was deemed appropriate in order to retain the participants for the entire duration. For the purpose of this study, only one 6 week period was scheduled for implementation of the research.

Additionally, the English proficiency levels of some participants limited their ability to acquire the academic vocabulary. The researcher attempted to limit the differences of each group by ensuring a similar number of participants from each tier on the WIDA ACCESS was placed in each group. The research computed the combined means of the control and treatment groups of each tier. As one would expect, in the lowest tier, Tier A, participants scored much lower ($n = 6$, $M = 33.17$, $SD = 4.26$) than the highest tier, Tier C students ($n = 36$, $M = 73$, $SD = 12.28$), and Tier B students scored in the middle ($n = 18$, $M = 65.28$, $SD = 15.53$).

A limitation with the gender analysis was the unequal distribution of gender. In this district, males make up two-thirds of the middle school ESOL population. Both groups had a similar boy to girl ratio that was representative of this district, but with unequal sample sizes, the power of analysis was weak. Another limitation of gender was that the researcher did not account for the proficiency tier of the participants when analyzing scores. The girls accounted for 17% of Tier A, 56% of Tier B, and 24% of Tier C according to their WIDA placement scores.

Recommendations for Future Research

The outcomes of this study led to several recommendations for future research. First, it would be beneficial to repeat or conduct a similar study with a larger population. Due to the limited sample size, the power of analysis was weaker than the researcher intended. Providing a sample size greater than or equal to 100 would provide a stronger statistical analysis.

Incorporating this study to a broader scope of participants by including more school districts in the study would make the findings more generalizable. Selecting sample middles schools from variety of districts, both urban and rural, would contribute substantially to the existing body of research.

Another recommendation is to use only Tier C-proficient English learners. Students that have a better understanding of the English language are more prepared to acquire academic vocabulary. ESOL students must begin with general concrete vocabulary and build their background knowledge before they can be successful with the abstract language of academic vocabulary.

Comparing groups by native language is another suggestion. Learning if there is a significant difference among different language learners could add to this area of research. Additionally, if research focuses solely on one native language group, extraneous factors such as alphabetic principle could be eliminated.

A longer intervention is recommended to allow students more time to interact with the vocabulary. If time permitted in the school year for the implementation of a long-term traditional learning study followed by a second long-term session of game-based learning with new words with the same participants, the data might yield different results.

Finally, to add depth to the gender study, a larger population of each gender would be beneficial. In addition, having an equal sample size would strengthen the analysis. The researcher could focus only on gender in game-based learning of academic vocabulary to contribute additional data to the growing body of research focused on game-based learning for academic vocabulary acquisition for middle school ESOL students.

Clearly, there is need to continue research of teaching and learning strategies for academic vocabulary acquisition. The lack of understanding of academic language continues to place ESOL middle school students at a disadvantage, and research must continue so as to develop best practices to eliminate the achievement gap between ESOL middle school students and their native peers.

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APPENDIX A

Measure of Academic Vocabulary

Word	I've never seen it	I have seen the word but don't know what it means	I have seen this word and think it means…	I know this word and can use it in a sentence. (write sentence)
Analysis				
Approach				
Area				
Assessment				
Assume				
Authority				
Available				
Benefit				
Concept				
Consistent				
Constitutional				
Context				
Contract				
Create				
Data				
Definition				
Derived				
Distribution				
Economic				
Environment				
Established				
Estimate				
Evidence				
Export				
Factors				
Financial				
Formula				
Function				
Identified				
Income				

APPENDIX B

Assent to Participate

Parent/Guardian Consent Form

Jeanette Benoit
Game-based Learning for Academic Vocabulary Acquisition
Liberty University

My name is Jeanette Benoit, and I am an ESOL teacher in your child's district and a student at Liberty University. I am doing a research study and would like to tell you about this study and ask if you will allow your child to participate in it. I would like your child to participate in this study because your child is currently an ESOL student and I am looking for effective ways to teach academic vocabulary in the ESOL classroom to help students be more fluent academically.

Background Information: What is a research study?

A research study is when people, like me, collect a lot of information about a certain thing to find out more about it. Before you decide if you want your child to be in this study, it is important for you to understand why I'm doing the research and what's involved. Please read this form carefully. If you have questions about this research, just ask!

Why am I doing this study?

The purpose of this study is to determine if game-based learning is a good teaching and learning strategy for learning new academic vocabulary. I am looking to see how much students can remember after playing games or reading and doing worksheets. I really want to know if students can apply what they learn at the end of a six week unit.
I am doing this study to find out if games can help middle school ESOL students learn academic vocabulary better than traditional lessons for academic vocabulary acquisition. This input is important to the study so I can determine the best way to motivate students for better vocabulary learning.

Procedures: What will happen if your child is in this study?

If you agree to allow your child/student to be in this study, I would ask him or her to do the following things:
Play games, complete worksheets, read sentences, and/or make graphic organizers for 15 minutes, 3 times each week for 6 weeks.
Fill out a non-graded measurement to see how much he/she remembers after 6 weeks. This measurement should take about 30 minutes to complete.
The research study will take place in an ESOL classroom during your child's regular scheduled class period.

Are there any risks or benefits to being in the study?

There are no risks to your child during the study other than those that he or she would ordinarily encounter in school on a regular school day. The benefit is your student will learn new words that will help in all classes. I hope that this research will help me develop better teaching strategies for ESOL classes.

Confidentiality

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a student because no names nor identifying information will be asked for or given concerning the participants. Research records will be stored securely at the researcher's home and will be destroyed three years after the publication of the dissertation. Only the researcher will have access to the records.

Will your child get paid for being in the study?

No, no one will receive compensation for participation in this study.

Does your child have to be in the study?

 No, this study is voluntary. Your decision whether or not to allow your child/student to participate will not affect his or her current or future relations with Liberty University or his or her school, class, or teacher. If you decide to allow your child/student to participate, he or she is free to not answer any question or withdraw at any time without affecting those relationships. There are no grades given for the study, so your student should be comfortable learning new vocabulary words.

Contacts and Questions:

The researcher conducting this study is Jeanette Benoit. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at jmbenoit@liberty.edu or call or text @ (678) 458-7354. You may also contact the researcher's faculty advisor, Christopher Clark, at cclark7@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Carter 134, Lynchburg, VA 24515 or email at irb@liberty.edu.

****

Statement of Consent:

I have read and understood the above information. I have asked questions and have received answers. I consent to allow my child/student to participate in the study.

Signature of parent or guardian: _____ Date: _____

Signature of Investigator: _____ Date: _____

APPENDIX C

IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

April 27, 2016

Jeanette Benoit
IRB Exemption 2468.042716: The Effect of Game-Based Learning on Vocabulary Acquisition for Middle School English Language Learners

Dear Jeanette,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(1), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

Administrative Chair of Institutional Research
The Graduate School

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