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MODERN LEARNING: QUIZLET IN THE SOCIAL STUDIES CLASSROOM

A Thesis by

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Bachelor of Arts in Education, Wichita State University, 2004

Submitted to the department of Curriculum and Instruction
and the faculty of the Graduate School of
Wichita State University
in partial fulfillment of
the requirements for the degree of
Master of Education

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MODERN LEARNING: QUIZLET IN THE SOCIAL STUDIES CLASSROOM

The following faculty members have examined the final copy of this thesis for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the Master Education with a major in Special Education.

Linda Mitchell, Committee Chair

Kim McDowell, Committee Member

Marlene Schommer-Aikins, Committee Member

DEDICATION

To all of my teachers
Religious, related, and relevant

ABSTRACT

This study evaluated the effects of technology on the performance of high school students with learning disabilities in a resource room to increase skills of learning new vocabulary that is linked to standards within reading. The study included participants from four special education classes. The participants in the study were given in a 2-week intervention utilizing an adaptive version of the Frayer Model (direct instruction) or Quizlet (use of computer-aided/technology instruction, an interactive education game) to determine comparative difference of skill level achievement. The context factors included students in the special education program at a high school in an urban city located in a mid-west state. All participants completed a pre/post survey and pre/post vocabulary exams.

Descriptive statistics, using SPSS, provided the methods for analyzing the data. Results showed that both the preference of learning styles by these participants and effectiveness of the computer-aided instruction (Quizlet) yielded better scores over teacher-student direct instruction (Adaptive Frayer Model).

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LIST OF ABBREVIATIONS

ACT	American College Test
ANCOVA	Analysis of Covariance
CAI	Computer-assistive Instruction
CBI	Computer-based Instruction
IDEA	Individuals with Disabilities Education Act
IEP	Individualized Education Plan
LD	Learning Disability
NCLB	No Child Left Behind
NWEA	Northwest Evaluation Association
SPSS	Statistical package for the Social Sciences

CHAPTER 1

INTRODUCTION

Legislation has been one of the driving forces for an increase in reading achievement. No Child Left Behind (NCLB) requires all students to achieve educational success as measured by passing state assessments per their current grade level, including the area of reading. This law requires schools to meet prescribed reading scores and instruction used must be linked to scientifically based research instruction. The Individuals with Disabilities Education Act (IDEA, 2004) provides students who have a disability access to a free and appropriate public education. It also requires an individualized education program (IEP) requiring a team of professionals, parents, and the student, when appropriate, to consider the strengths and the needs of the student on a yearly basis. The team considers what services are needed, including those to promote reading skills, if needed by the individual student, as well as what kind of technology and/or assistive technology could educationally benefit the student. IDEA also requires transition planning for adulthood including goals and resources, which can include technology, for the student emphasizing secondary education, employment, and daily living skills.

Depending on the needs of the student, there are several items of technology that could benefit in the education of a student with a learning disability. Some students use programs that type text as they say it. Other programs read information to the student. The programs allow students to continue learning content information using their strengths and helping minimize their weaknesses. New pieces of technology are created and need to be analyzed for educational benefits. To this point, students with learning disabilities (LD), typically, struggle with reading, including learning vocabulary needed in content area readings that are linked to meeting state standards.

Lyon (1997) as cited by Kim, Woodruff, Klein, & Vaughn (2006) states “The ability to read and comprehend is essential to school success, yet more than 90% of students with LD demonstrate reading difficulties” (p.270). Forgive (2002) supports reading difficulties within specific areas of reading difficulties. She states “Students with learning disabilities have problems decoding words” (p.122). She continues to explain that “When errors occur in reading, the student receives less than complete information from the text, and comprehension is adversely affected” (p. 122). Sencibaugh (2007) also implied that students identified with a learning disability struggle with comprehending the text. Students are unable to connect sounds with letters to make words that work together to express thought. Obviously, students who cannot read at or within their grade level are not able to be successful in a classroom that requires them to read from a grade level textbook to acquire new information. High School core classes require students to read to learn, assuming they have acquired all basic reading abilities by this point.

Numerous reasons are given for students’ inability to read. The most important for educators, however, is a deficiency in instruction (Blanton, Wood, & Taylor, 2007). Students should be able to connect meaning with words, recall specific details, and draw inferences and conclusions from a text. After third grade, teachers may not teach basic reading skills in general education classes. They focus on subject matter (Hasselbring, 2004). Blanton, Wood, and Taylor addressed the issue of reading for middle school students. They concluded that students who could not read expository text by fourth grade continue to fail. They also discuss that remediation is done in a pull out classroom (e.g. resource room) at the same time their peers are learning new skills. Those students are behind in reading and in skills being taught during the time they were pulled out. Students report feeling overwhelmed and frustrated, so they disengage

from school. Actions reflecting their frustration are evident in the form of incomplete or missing assignments, behavioral problems, and truancy (Boon, Fore, Rasheed, 2007; Guthrie, 2004).

Challenge continues even after the students graduate. If one of the goals of special education service provision is to improve overall quality of life, reading must be a skill in which they leave with competence. However, the reality is that there are students with learning disabilities who are employed less and suffer from emotional and behavioral issues including a high risk for suicide (Daniel et al., 2006). These are not examples of a successful transition from high school to the work force and a positive life.

It is imperative that students with learning disabilities truly receive a free and appropriate public education that equips them with the skills necessary to be successful in the adult world. In order to fully prepare students with learning disabilities to learn content knowledge and skills in the classroom and transition them to adult life, more research concerning the relationship between vocabulary building and technology is crucial.

“For all students, technology makes things easier. For students with disabilities, technology makes things possible” (McCulloch, 2004, p. 6). Examples of technology already being used by students for writing include computers or digital calendars, and specific software such as word prediction and speech to text (McCulloch, 2004). Books on tape, electronic dictionaries and screen readers are used to help students read. Even cell phones are being used to learn vocabulary (Lu, 2008). As technology becomes more available, so might the educational benefits.

CHAPTER 2

LITERATURE REVIEW

All students need to be efficient readers in order to be successful in life. Learning vocabulary is a fundamental step in learning to read. It is important to understand what students struggle with and how to best help them. Technology may be the answer to many students' reading struggles. Technology is motivating, can reach all learning styles, allows real world experiences, and is becoming more available.

Why is learning vocabulary important?

Reading skills are an absolute necessity to be a successful adult. Vocabulary is a major component in the ability to comprehend text. As stated by Jitendra, Edwards, Sacks, and Jacobson (2004), "Vocabulary knowledge is fundamental to reading comprehension" (p. 299). The National Reading Panel (2006) states, "reading vocabulary is crucial to the comprehension processes of a skilled reader" (p. 230). Acknowledgement of the importance of vocabulary is not a new discovery. Researchers for over 80 years have recognized vocabulary as a necessary ingredient for reading success (National Reading Panel, 2006).

How does having a learning disability change the learning process?

IDEA defines a learning disability as having a problem with language including, being able to "listen, think, speak, read, write, spell or do mathematical calculations" (IDEA, 2004, section). Academically, normal daily functions for general education students often are more difficult for students with a learning disability to negotiate. Staying organized, checking over their work, assessing and evaluating a project can be more difficult. It is important to remember that not all students with a learning disability experience all or the same combination of characteristics.

Students with learning disabilities may progress at a slower rate in the classroom because they process information in a different way. Students often have “deficits in acquiring, organizing, and prioritizing key informational themes without overload” (Turnbull, Turnbull, & Wehmeyer, 2010, p.127). Students who read text do not always know how to pick out the main idea and important supporting details. If they are able to read the words to gain the information (decode), then they can still have difficulty being able to retrieve and use the information they just read. Also, students with organizational problems often misplace books, papers, and other tools needed to complete daily work (Turnbull et. al., 2010).

Students with learning disabilities also have a problem with assessing their own success while working. If they are not using the right skills to complete a task, they have a difficult time stopping and starting a new strategy. Similarly, when students with a learning disability complete a problem, they often have a hard time evaluating if the answer is reasonable or possible (Turnbull et. al., 2010). For example, students may not successfully recall a vocabulary word while they are reading even though they have seen or heard the word several times even in the same context.

Like educational difficulties, social issues impact school success. Students with learning disabilities may have problems with their self concept, loneliness, reading other’s emotions, finding solutions to social problems, participating in conversations, and making and keeping friends (Turnbull et. al., 2010). Students who rarely feel success in the classroom would rather be someplace else doing anything else they feel good about doing. Students feel isolated when they are unable to communicate their wants and needs to others. They are unable to emotionally connect with their peers because they have a disagreement, and the student is unable to react appropriately to the situation. The student may have a hard time analyzing and discussing a

social situation and, therefore, cannot move past it. When students do not make connections with their surroundings, they are unable to take risks such as reading aloud in the classroom.

Socially, students with a learning disability have a lower self-esteem and a poor academic self-concept. Some have a difficult time reading nonverbal cues from peers, starting or holding a conversation, or finding a positive solution to a problem with a peer (Turnbull et. al., 2010).

Social issues can be a distraction to academic learning, including learning reading skills, especially in adolescents.

Empirical Research and Teaching Vocabulary

Little research concerning reading needs of high school students with learning disabilities is available even though there are a sizeable number of students with learning disabilities. In general, reading and vocabulary are well-researched subjects. That research primarily focuses on younger elementary students, less middle school students and few high school students. What is needed is for the research to target students with specific learning disabilities in the area of reading to add to the current literature supports.

Giving students time to read helps increase their vocabulary (Guthrie, 2004; Jitendra et al., 2004; National Reading Panel, 2006; Townsend, 2009). When students have a chance to read in their area of interest, they are introduced to new vocabulary. They use word strategies to learn the definition of the word and see an example of how that word is used. After multiple introductions to a specific word, the student is able to master that word. Jitendra et al. (2004) reports that "...students who read independently for at least ten minutes each day appear to experience substantially higher rates of vocabulary growth than students who do very little independent reading" (p. 300). Similar to the need for more time reading, allowing students continual practice with the new vocabulary words have been proven to help students effectively

learn vocabulary (Foil & Alber, 2002; Vaughn, Wanzek, Murray, Linan-Thompson, & Woodruff, 2009). “The best gains made in instruction that extended beyond single class periods and involved multiple exposures in authentic contexts beyond the classroom” (National Reading Panel, 2006, pg. 231). Teachers should plan for the student to use and reuse the word and see the word used in different contexts. Opportunities for student exposure includes playing vocabulary games, hearing the word in a video or lecture, requiring the students to use the word in a sentence they create, and seeing the word in a text book.

Active engagement in any vocabulary learning is necessary (National Reading Panel, 2006; Foil & Abler, 2002; Townsend, 2009; Guthrie, 2004). Engagement activities can include self-questioning or relating material to the student’s personal experience (Guthrie, 2004). Students must interact with the words and process their meanings (Townsend, 2009). Students must make their own connection to what they already know and what they are learning for a deeper understanding.

Beck, McKeowen, and Kucan (2002) categorized words students are required to learn in third through twelfth grades. They were able to place these words in three tiers. Tier one consists of words that do not require direct teaching and are easier to define using the context of the sentence. Tier two words are “appear frequently across a wide variety of domains”, are easier to connect to known words and concepts, and allow a student to “provide precision and specificity in describing the concept” (p. 19). Tier three words are more content specific and are difficult to define using only the context of the sentence.

Guthrie (2004) describes teaching for engagement in five components. First, there must be a goal or reason for the student to read. This goal might be as simple as reading in order to answer teacher questions. Second, the student appreciates choices. Choices allow the student to

personalize or individualize what they are learning. They have the power or choice and can avoid subjects they are less interested in learning. Third, the choices of text the students are required to read should be interesting to the students reading them. The subjects of text should somehow be relative or meaningful to the reader. Fourth, hands on activities are a must. Students can benefit from making an abstract concept into something hands on that they can manipulate and explore. The fifth and final component is collaboration. Students need to work together and discuss with their peers what they have learned and what they still question. Collaboration helps the students personalize the information.

Multiple types of instruction of the same curriculum are necessary (National Reading Panel, 2006; Foil & Alber, 2002; Townsend, 2009). Research shows there is no single way to teach or learn vocabulary among any age group or ability level. Combinations of strategies are necessary to successfully teach or learn vocabulary. “Thus, one exposure, even a meaningful one, would not be sufficient to help students build enduring knowledge of the target words” (Townsend, 2009, p. 245). Woodfine, Baptista and Wright (2008) summarizes it by stating, “Learning occurs through interaction with rich learning environments, and results from engaging in authentic activities, social interaction and negotiation with peers and tutors” (p. 705).

What are known strategies for assisting students with learning disabilities learn vocabulary?

Terrill, Scrugs, and Mastropieri (2004) used eight students with learning disabilities in the tenth grade to determine if creating mnemonics for students would be effective in teaching them vocabulary. In the 6-week study, repeated-measures design, the researcher, a special education teacher, alternated giving a packet of ten words for one week containing the word, definition, the keyword, and a picture to help link the keyword and the vocabulary word. On the other week, students worked from a traditional vocabulary workbook (Terrill et al., 2004). The

traditional workbook activities “contained fill-in-the-blank definitions, sentence-completion activities, and synonyms” (Terrill et al., 2004, p. 290). Results concluded that “all students scored higher on vocabulary tests when in the keyword mnemonic condition” and students reported preferring “the keyword method, not only because it facilitated the learning of the words but also because they enjoyed being successful” (Terrill, p. 293). The findings of this research study were consistent with previous research.

Jitendra, Edwards, Sacks, and Jacobson (2004) found answers for “What research says about vocabulary instruction for students with learning disabilities” (p.299). In research studies published between 1978 through 2002, three provided distinguishable results that students with learning disabilities are able to learn vocabulary given the correct strategies. First, “researchers and practitioners must emphasize instructional methods that directly teach vocabulary” (Jitendra et. al, p. 320). The most efficient type of instruction depends on the specific goals of each lesson (Beck & McKeown, 1991; McKeown & Beck, 1998 as cited by Jitendra et al., 2004). These same studies conclude that teaching the meaning of a new word is best taught using direct instruction and a semantic approach is best used for teaching the student different ways a word can be used.

A second finding by Jitendra et al. (2004) “is that practice is critical to vocabulary acquisition that, in turn, may lead to maintenance and generalization” (p. 320). It is paramount that students have enough time to learn new words and opportunities to practice using those words on their own. Also, an appropriate learning environment needs to be available. Students need necessary supplies, good room temperature and lighting. They need adequate personal space and workable seating.

Finally, the third finding is selecting effective computer-assistive instruction (CAI) as an aid to teacher instruction. Jitendra et al. (2004) state, “Often, the only difference between CAI and teacher instruction is that CAI is presented on a computer screen and may involve the presentation of worksheet-type activities for the purpose of drill and practice rather than systematic strategy instruction” (p. 320). The CAI is able to individualize the learning experience to the needs of the student. For example, Herbert and Murdock (1994) researched the effectiveness of a CAI using digitalized and synthesized speech compared to no speech. From this experience, the students showed they learned better using synthesized and digitized speech than without using speech.

Possibilities For Improving Reading Ability Through Use Of Technology

Review of the research revealed that technology might be the answer to providing a solution for students with learning disabilities who have reading difficulties. There is little research concerning the use of technology in education concerning reading, but the small amount shows positive results. Students with learning disabilities and deficits in reading encounter problems in education and socialization. Technology effectively and efficiently improves students’ abilities by motivating and engaging learners (Greene, Bolick, & Robertson, 2009; Kebritchi, 2010; McKenzie, 2009; National Reading Panel, 2006; Salsbury, 2006; Twyman & Tindall, 2006), assisting in locating and organizing information (Doherty, 2002; Green et. al., 2009; Ben-David Kolikant, 2009; Twyman et al., 2006), offering a more individualized learning experience (McKenzie, 2009; Karemaker, Pitchford, O’Malley, 2010; Kebritchi, 2010; Kim, 2006; Ben-David Kolikant, 2009; Lu, 2008; Twyman et al., 2006), and providing tools to support reading (Karemaker et al, 2010; McKenzie, 2009).

Motivation and computer-assisted instruction. Students with learning disabilities are more likely to quit or never start a reading project required by a class because they have not been successful in the past. Technology can be a computer-aided instruction that brings in student persistence with reading lessons, as well as increase success for them. Twyman et al., (2006) describes technology as a change from a “nonlinear and innately flexible presentation of information...that enables to students with LD to access content information in a manner that allows them to minimize learning deficits while maximizing strengths” (p. 5). When students have the opportunity to taste success, they are more likely to repeat the activity. Salsbury (2006) conducted a study comparing teacher direct instruction, computer-assisted instruction, and a control group that did not receive any instruction of geographic place vocabulary to elementary students. She found, “Instruction provided via computers appears to be a more effective method than traditional direct instruction” (p. 147).

“Today’s students have grown up surrounded by technology and are often bored by traditional classroom activities” (McKenzie, 2009, p. 28). Many technologies are new to the classroom setting and provide a change to traditional reading and writing expectations. Educational games, e-books, and access to multimedia via the Internet can supplement classroom activities, and motivate students to engage in learning activities.

Access and organization with use of technology. Internet allows students in any community access to the world. Through text, videos, pictures, games, and messaging, students are able to access people, places, and new ideas that do not come from their own community. Information is more up to date than classroom textbooks and is available at any time or place that Internet access is available or can be saved for future reference. Technology can provide information not only provided by pricey textbooks, some of which are not accessible to all

students. Also, technology allows several students to use the same information at the same time allowing the students to individualize their exploration of information and the ability to collaborate with peers concerning what they found or about the process of making a decision of where or how to go next.

Technology allows students to explore their interests and manipulate the information because technology makes it available for their choosing. Specific programs are also available that help students organize the information they are exploring and learning. Twyman et al. (2006) acknowledged how students with learning disabilities often have difficulty applying strategies including organizational strategies. They stated:

With the appropriate sample size, it is probable that using the computer to supplement CBI would facilitate the interaction of knowledge structures and cognitive processes by giving the student an appropriate, prescribed, and interactive categorization scheme to see patterns in the information and apply them when necessary (p. 14).

Students growing up with so much available technology are also showing signs they are moving away from textbooks and a traditional style of thinking. “Reasoning has shifted from the linear, deductive, and abstract style of the book generation to the bricoleur style, an extreme demonstration of which is that when something ‘works’, no further justification is required” (Ben-David Kolikant, 2009, pg. 132). He continues on to explain, “In contrast to the book generation, which tended not to try things unless it was clear how to use, digital learners are not afraid to try new environments; in fact, they prefer to learn about them through exploration and trial” (Kolikant, 2009, pg 132). When using technology, students are able to choose the topics

that interest them most and learn about those topics by whatever learning style helps them the most.

Individualized learning and technology. The Internet, eBooks, games and software give students the opportunity to be in charge of their own learning increasing engagement and ownership and are especially effective for students with learning disabilities. Research shows technology can provide differentiated instruction allowing students to work at their own pace, read at their own level without drawing peer attention to the modification, providing immediate feedback to the student, and prepares students' data for the teacher and parents (Kim et al., 2006). Green et al. (2009) explains that students are able to find information using technology that best accentuates their learning style. Students are able to read and reread or listen to, or watch the same presentation assuring them they did not miss any information. Compared to a teacher lecturing, if the student has a question, they can replay the video, restart the recording, or reread the information without interruptions or embarrassment (Mckenzie, 2009). When students are able to individualize their own learning, they are more involved and can feel success that motivates them to continue learning (Twyman & Tindall, 2006).

Tools for success. In addition to presenting information in multiple ways through video and pictures, for example, specific tools are available to assist students in reading. In their study, Montali and Lewandowski (2006) implied that computers were successfully increasing reading practice and motivating the reader by saying the word aloud while highlighting it on the screen and helping the student read and understand without the constant aid of the teacher. Additional features include zooming in making the print larger, providing access to a dictionary, highlighting keywords, and allowing students keyword searches to find information faster.

Specifically for vocabulary, the student can efficiently find a specific vocabulary word for examples of how that word is used.

Questions guiding this research

Increasing vocabulary skills is critical to improving the reading skills of students and improving their overall academic achievement and is required by IDEA for every student who has an IEP. For students with learning disabilities, the ability to learn new vocabulary can be challenging when traditional instruction methods are used. This study investigated the use of technology in teaching vocabulary/reading skills with students who had learning disabilities at the high school level. Additionally, it sought the perspectives from the participants on how they believed they learned best between two intervention models of learning vocabulary. The first strategy used technology and the second did not use technology. Both strategies required the participant to define given words, use those words in a sentence, name antonyms and synonyms, and relate pictures to those words.

Vocabulary is a highly researched topic, but does not always include students with learning disabilities at the high school level. Research also states that technology can be used to enhance and help teach vocabulary to high school students with a learning disability. In order to best serve high school students with a known learning disability to find assistive technology, more research including students with learning disabilities and technology is necessary.

Sutherland, in 2005, developed an online interactive resource to assist students in learning vocabulary. This interactive resource is called Quizlet, and in its most basic form, creates games using electronic flashcards. Quizlet is a free resource that allows students to create their own flashcards or browse what other students have already created. Students can cut and paste their information directly on to the cards or use the official dictionary to find the best

definition. Groups of students can share flashcards to minimize the preparation time. Anyone can create the cards, but they can remain private if that is the choice of the creator. With over a million members, there are many groups and cards to choose to use. This study used Quizlet as the technology tool and intervention to teach vocabulary to students with learning disabilities at the high school level.

For a student user, there are five ways to interact with this resource. The five are familiarize mode, learn mode, test mode, scatter, and space race. Each way allows the user to be in control of how they want to study the words they choose. Some modes are timed. Others keep track of missed answers and re-quiz those words for extra practice and immediate feedback. This interactive resource also helps collect data showing success rates for learned vocabulary. Short answer, true or false, matching and multiple choice or a combination of those types of test questions are available for the user's practice.

Features for teachers include the ability to create flashcards for students, and it alerts them through e-mail when new flashcards are available. Also, the flashcards are printable. For a small yearly fee, pictures can be added to the cards to further help visual learners.

The Frayer Model has been researched and found to be a successful learning tool as a direct instruction model. Although there are several variations of the Frayer Model, the purpose remains to teach vocabulary. The Frayer Model (Frayer, Frederick, & Klausmeyer, 1969) is a graphic organizer that "presents concepts in a relational manner because it helps identify concepts by components such as: relevant and irrelevant attributes, examples and non-examples, superordinate, coordinate, and subordinate aspects of concepts" (Greenwood, 2002, pg 261).

The Frayer Model is an excellent visual for students with learning disabilities who have

difficulty creating connections between new and known information. This model was used as a traditional tool to teach vocabulary to students with learning disabilities at the high school level.

Purpose of the Study: Students can academically benefit from using technology

The purpose of this study was to find the most efficient tools to aide students with learning disabilities in learning vocabulary. IDEA requires educators to best prepare students for their transition into life after high school. Technology has shown to be beneficial in previous studies. The guiding research questions were “Does the use of Quizlet increase vocabulary skills for students with learning disabilities at the secondary level?” and “How do students with learning disabilities prefer to learn social studies vocabulary when offered either computer-aided instruction (Quizlet) or direct instruction (Frayer Model)?

CHAPTER 3

METHODOLOGY

In order to answer the research questions “Does the use of Quizlet increase vocabulary skills for students with learning disabilities at the secondary level?” and “How do students with learning disabilities prefer to learn social studies vocabulary when offered either computer-aided instruction (Quizlet) or direct instruction (adapted Frayer Model), quantitative methods were used in collecting, analyzing, and reporting results.

Participants

Twenty-seven students in grades 9-12 who were identified as students with special needs and benefit from special education services for a learning disability were invited to participate in this study. Participation was contingent on signed parental consent. All participants were enrolled in an interrelated Social Studies course and classified as a student with a learning disability who received special education services and read two or more grade levels below the ninth grade level as measured and reported by the Northwest Evaluation Association (NWEA) within a year of the start of the present school year. Nineteen of the participants were male and a high majority (n=17) Hispanic. Only number and initials identified final participants in the study, and a table outlining all demographic variables is included in research findings.

Setting

School. The participants were from an urban school district in a midwestern city. Total enrollment for the school was 1,989 students. Fifty-two percent of the students were Hispanic, 26% Caucasian, and 11% African American. Smaller sub-groups included 8% multi-racial and 2% Asian. Forty-three percent spoke Spanish in their home. Over 75% qualified for free and reduced lunches. As of April 2009, seniors reported (25%) they were first to graduate in their

family, 56% had a job, and 46% worked more than part-time hours. In the 2008-2009 school year, 76.5% of the school qualified for free and reduced lunches and of those students, 65.1% qualified for free lunches.

The sample of participants consisted of 53 students in the ninth through twelfth grades from an urban area high school in the Midwest. The students who agreed to be in the study and whose parents signed the consent form participated in the research. Incentives such as candy and the ability to eat or drink during class were offered by the researcher/teacher to students who assented. There were two groups of participants, one group who received an intervention using Quizlet and a second group who used the adapted Frayer Model. All participants had been identified with a learning disability and were scheduled by the high school to receive class in a special education classroom with only special education peers and one special education teacher. Participants reading abilities varied between .01% and the 12%ile as measured by the NWEA.

Groups. All participants attended the same urban high school. The researcher chose one ninth grade World History class, now known as group A, and one eleventh grade U.S. History II class, now known as group C, to use Quizlet. Then, the researcher chose a separate class of ninth grade World History students, group B and eleventh grade U.S. II class, now group D, to use the adapted Frayer model. All participants were enrolled by the high school and based on requirements for graduation determined by school administration at the start of the year. Each group met at a separate time during the school day on an every other day basis. From these four groups, students were asked to participate in this research. All participants enrolled in these courses met the requirements to participate in the special education program by having a severe discrepancy between their level of ability as measured by a school psychologist using ability tests such as the Woodcock-Johnson test of cognitive abilities and their achievement as measured

by a test such as the Woodcock Johnson test of Achievement III (Woodcock, McGrew, & Mather, 2001b). Their least restrictive environment was determined by their IEP team to be in an interrelated Social Studies classroom participating only with their special needs peers. All students who were enrolled in these courses were required to complete the same surveys, tests, and vocabulary activities. Students who chose not to participate continued with identical classroom activities as the participants. The classroom teacher collected data on students who chose to participate in this research during the two-week time span of the study.

Measures

The classroom teacher (researcher) collected data on all participants including two participant surveys and two, six word vocabulary tests. All data was analyzed and graded by the teacher/researcher. This process lasted approximately 2 weeks or 12 days of block scheduled class periods that met every other weekday.

Participant Survey. Each participant was given a written survey previous to the intervention and asked to consider and then answer questions comparing how well they perceived how they learned vocabulary using a technological game called Quizlet and a non-technological direct instructional model, the adapted Frayer Model. After the post vocabulary test, the participants were asked again to analyze their successes and failures and then complete the survey a second time. The survey was analyzed using a quantitative method of measure based on a scale from 1 (never), 2 (sometimes), and three (always). (Appendix C)

Pre- and Post-Vocabulary tests. A teacher-created vocabulary achievement assessment was used for the pretest and posttest (appendix A). The pretest for the intervention was a pencil and paper test that required the participants to define the vocabulary word using their own explanation, provide an example of an antonym and synonym, and use each word correctly in a

sentence. The posttest was identical. It asked the participants to write the definition of the six words, provide an example of an antonym and synonym, and use the word correctly in a sentence. Quantitative methods using ANCOVA analyzed the data obtained from the pre- and post-tests.

Intervention Procedure

After obtaining parental consents and participant assents, participants completed the first survey inquiring about their opinions of how they think they best learned vocabulary and their familiarity with using technology to learn based on their own previous experiences. Answers were tallied using a 1-3 Likert scale, when a 1 denoted never, 2 sometimes and 3 denoted the student always agreed with the statement.. Then all participants completed a pretest of six vocabulary words. For each word, the student was required to write a definition, antonym, synonym, and use the word in a sentence of their own. Vocabulary words were identified by the researcher from those used within the Social Studies curriculum considered to be Tier II words or words the students would use across the curriculum and in real life not specific to a certain class. These words were also considered to be at the instructional level of the students learning them. A list of the words has been added as appendix item.

Group A and C participants practiced learning definitions using flashcards on the computer screen they flipped with the mouse. To learn the definitions, they had two choices. They could choose to see the vocabulary word and definition together or just the word or just the definition. They had the option to study only the words they did not know and switch to a new word at their own pace. Once they had a base knowledge of the definition of all six words, they played timed games, and related the vocabulary words to pictures provided by the Quizlet program. Each student was allowed to use any option in Quizlet for the allowed time each class

period. This provided the students with power over what they wanted to learn and how they wanted to learn it.

On the first day, the teacher instructed the participants on how to log in, find words and pictures, and the five modes available (familiarize, learn, test, scatter, and space race). Many chose to try all of the modes to get familiarized with the program itself. On the second day, most of the participants practiced with the flashcards and looked at the pictures assigned to each word. The third through sixth day, the participants spent most of their time testing their knowledge by playing scatter and the space race. This space race game in Quizlet showed one definition moving from the right side of the computer screen to the left. The participant was required to correctly type the vocabulary word that matched the definition or type the definition that matched the word. After all words were correctly identified, the player moved on to subsequent levels where the definitions or words moved faster. The students created a competition between themselves on who could attain the highest level. This game was also played using antonyms of the words. Similarly, the antonym would move across the screen and the participant was required to type the matching vocabulary word. These activities were completed in a computer room located down the hall from the regularly assigned classroom. Each participant had their own desktop computer and no other classes were in the same room at the same time.

Group B and D used an adapted version of the Frayer Model where they wrote the definition of the word, antonyms, synonyms, and drawing pictures for the same six words as used in group A and C. Participants were assigned two words a day to use in the adaptive Frayer model. For 15 minutes at the start of every class period, participants were asked to fill out the definition, name an antonym and synonym for each word, use the word in a sentence, and draw a picture to help them remember the definition. They had access to the assigned Social Studies

textbook and dictionaries in the classroom. Each student received two new words each class period and completed the adaptive Frayer model using those words. Students were allowed to complete more than those two words, but many did not because of the time allowed each class period. The adaptive Frayer model was completed in the regularly assigned classroom. There was no visible competition or dialogue between participants about vocabulary or the assignment.

Each group completed the assigned vocabulary activity (computer or paper) approximately three times for 15 minutes each period for 2 weeks. All participants were encouraged to study the vocabulary words in their spare time. After 2 weeks of the intervention, both groups completed a post-test requiring them to write the definition, antonym, synonym, and use the word in a sentence. All participants were tested using pencil and paper in the regularly assigned classroom. The vocabulary words were listed on the classroom whiteboard for student reference. Refer to the Intervention table 3.1 for a visual of groups and what intervention they used.

Tests over the vocabulary words were graded by the classroom teacher. Two points were awarded for the correct definition, one point for a correct antonym, one point of a correct synonym, and two points for a correct sentence using the word. Each word had the potential to score as high as 6 points. Partial points were awarded for the definition and sentence if the student was partially correct. No points were awarded if the item was left blank or gave a wrong answer. Data from the pre- and post-tests of all groups were analyzed for any percentage differences in scores. The amount of growth or no growth was compared between each intervention method: using Quizlet and the adapted Frayer model. The information for the pre- and post-tests and surveys were reported using quantitative methodology, specifically

ANCOVA, to evaluate the results. Table 3.1 provides a visual for the groups' letter, grade level, hour, and intervention.

Table 3.1

Intervention Schedule

Group	Intervention (2 weeks)
A-World History 1 st hr.	Quizlet
B-World History 2 nd hr.	Frayer Model
C-U.S. II 3 rd hr.	Quizlet
D-U.S. II 8 th hr.	Frayer Model

CHAPTER 4

RESULTS

The purpose of this study was to determine which approach supported vocabulary achievement for students with learning disabilities, the use of a computer program (Quizlet), or a direct instruction model (adapted Frayer model). IDEA requires educators to best prepare students for their transition into life after high school. Technology has shown to be beneficial in previous studies. The guiding research questions were “Does the use of Quizlet increase vocabulary skills for students with learning disabilities at the secondary level?”, and “How do students with learning disabilities prefer to learn social studies vocabulary when offered either computer-aided instruction (Quizlet) or direct instruction (Frayer Model)?”

Descriptive Statistics

There were 26 total participants to complete the vocabulary posttest. Twelve were ninth graders and 14 were eleventh graders. Both the Quizlet and adapted Frayer model had 6 ninth grade students. The Quizlet group of eleventh graders had 5 participants and the adapted Frayer model group had 9. The total mean score for the Quizlet model was 23.09 and the total mean score for the adapted Frayer model was 13.86. Six students, one girl and two boys, were classified by the school as Caucasian. Seventeen were classified as Hispanic: six girls and eleven boys. All but two of the Hispanic students spoke Spanish as well as English. Three participating students were classified as African American: two boys and one girl.

Addressing the Research Questions

A general overview of the data was obtained by generating descriptive statistics for all of the variables. The first research question addressed was the following: Are there differences in students' posttest vocabulary performance controlling for their pretest attitudes and pretest

vocabulary scores were the covariates? Posttest vocabulary scores were the dependent variable and the grade and instruction were the independent variables. There was one significant difference for instructional type. Students taught with Quizlet outperformed students taught with the adapted Frayer method; $F(1,19) = 4.93, p < .05, \eta^2 = .21$. See table 4.1

The first research question addressed was the following: Are there differences in students' posttest vocabulary performance controlling for their posttest attitudes and pretest vocabulary performance? Using ANCOVA, the posttest of both attitudes and their pretest vocabulary scores were the covariates and posttest vocabulary scores the dependent variable. Grade and instruction were the independent variables. There was one significant difference for instructional type. Students taught with Quizlet outperformed students taught with the adaptive Frayer method; $F(1, 20) = 5.48, p < .05, \eta^2 = .22$.

The second research question addressed was the following: Are there significant differences in students' posttest attitudes toward the adaptive Frayer model when controlling for their pretest attitudes? The use of analysis of covariance (ANCOVA) was conducted where the pretest attitude was the dependent variable and the grade and instruction were the independent variables. The pretest attitude was the covariate. There were no significant differences between the groups. See table 4.2.

The second research question addressed was the following: Are there differences in students' posttest attitudes toward the Quizlet model when controlling for their pretest attitudes? ANCOVA was used to find any differences. The posttest attitude is the dependent variable and the grade and instruction were the independent variables. The pretest was the covariate. There was one significant difference. Ninth graders appreciated Quizlet significantly more than eleventh graders: $F(1,21) = 5.64, p < .05, \eta^2 = .21$. See table 4.3.

Table 4.1

Posttest Vocabulary

Grade	Instruction	Mean	Std. Deviation	n
9 th Grade	Quizlet	17.33	11.96	6
	Frayer	11.83	6.04	6
	Total	14.58	9.48	12
11 th Grade	Quizlet	30.00	7.38	5
	Frayer	15.22	12.73	9
	Total	20.50	13.06	14
Total	Quizlet	23.09	11.70	11
	Frayer	13.86	10.42	15
	Total	17.76	11.71	26

Table 4.2

Posttest Frayer Attitudes

Grade	Instruction	Mean	Std. Deviation	n
9 th Grade	Quizlet	4.00	1.09	6
	Frayer	4.14	.69	7
	Total	4.07	.86	13
11 th Grade	Quizlet	3.80	.83	5
	Frayer	3.77	1.64	9
	Total	3.78	1.36	14
Total	Quizlet	3.90	.04	11
Grade	Instruction	Mean	Std. Deviation	n
Total	Frayer	3.93	1.28	16
	Total	3.92	1.14	27

Table 4.3

Posttest Quizlet Attitude

Grade	Instruction	Mean	Std. Deviation	n
9 th Grade	Quizlet	7.16	1.83	6
	Frayer	6.67	1.63	6
	Total	6.91	1.63	12
11 th Grade	Quizlet	6.00	1.58	5
	Frayer	4.89	1.90	9
	Total	5.29	1.82	14
Total	Quizlet	6.63	1.74	11
	Frayer	5.60	1.95	15
	Total	6.03	1.90	26

CHAPTER 5

CONCLUSIONS

The data gathered through the pre-and post-survey and the pre-and post vocabulary tests was evaluated for indications of determining which teaching tool students with a learning disability provided greater achievement for learning vocabulary and to assess which model they preferred to learn. Data from the two types of instructional strategies (Quizlet and adaptive Frayer Model) showed a significant difference between the two instructional types. Like previous studies, participants who used technology showed a higher increase of achievement than when they use other types of instruction (Jitendra, 2004; Karmaker et. al., 2008; Kehtirchi, 2010; Kim et. al., 2006; & Salsbury, 2006). The participants who used Quizlet scored significantly higher than students who used the adaptive Frayer Model. Both instructional strategies showed an increase of student knowledge of vocabulary, however, the participants using Quizlet showed a larger gain in vocabulary knowledge.

Participants in the ninth grade reported they preferred to use Quizlet to the adaptive Frayer model. Boone et al. (2007) found that students believed technology helped their learning and Ben-David Kolikant (2009) reported, “Specifically, it was evident that a significant number of students prefer using the Internet when they have a choice” (p. 142). Results of this study correlate to previous studies. Some students do prefer using technology instead of non-technology to learn vocabulary.

Possible Factors

Participants may have been motivated to learn because they were allowed to use the computer program when it is not a normal occurrence. This motivation may decrease when the

students are allowed to use the computers more often. In addition, the change in the learning setting may have positively contributed to the outcome of this study.

Research continually shows that students are motivated to learn using technology such as the internet because it offers them a chance to work at their own pace, going in any direction they prefer, and provides them immediate feedback (Kim et al., 2006). Jitendra (2004) points out that in order to learn vocabulary, a student must practice using the word. Technology or Quizlet may be the motivation some students need to continue practicing in order to master the word. In this study, the students working with Quizlet had most of the information already available from the website. They had more time to learn the information compared to the students using the adaptive Frayer Model who were required to find the information in a textbook by reading and flipping through pages.

Limitations

The first limitation of this study is the low number of participants from the same high school. This small sample cannot adequately represent all students in the ninth and eleventh grade adaptive Social Studies classes who have been identified with a learning disability.

The second limitation might be that the students only experienced one type of instruction. The students were assigned to either Quizlet or the adapted Frayer Model for this research, but asked to compare how they thought they learned better. The outcomes of the survey may have been different if all groups were taught using Quizlet and the adaptive Frayer Model. When looking at their own pre-and post-test results, they may have noticed a larger difference between how well they learned or no difference at all.

Furthermore, their self-report of prior knowledge of instructional type was inaccurate. School wide, every student was introduced to the adaptive Frayer model in multiple settings,

however, students reported on the survey that they had never used the Frayer model. I chose not to use question 10 from the survey due to its obvious inaccuracies. The reason for the inaccuracy is still unknown. Possible answers may include not understanding the survey question or knowing the name of the strategy used to learn vocabulary even when the strategy was written as Frayer and referred to during instruction as the Frayer model. Future researchers may want to address this issue by making the students write out the name of the instruction type to better acquaint them with the names or describe the model in terms of the students. For example, students may have responded to “vocabulary worksheet” or a smaller picture of the graphic organizer.

Future Research

Students with learning disabilities are well documented to have greater struggles with vocabulary acquisition and finding efficient ways to learn (Jitendra et al., 2004). This research along with previous research indicates that both students with and without learning disabilities learn vocabulary more efficiently using technology (Jitendra et al, 2004; Karemaker et al., 2008; Salsbury, 2006). Students also report preferring to use technology to learn in school (Boon et al., 2007; Ben-David Kolikant, 2009). Considering the outcome of this study and previous studies, technology should continue to be studied in the educational setting to find its full potential. This should include all grade levels, all content areas using vocabulary, and with students with all types of learning disabilities.

Students with disabilities learn differently than students who do not have a learning disability. Most research analyzes techniques for the majority of students-those without a learning disability. Jitendra et al. (2004) say, “It is discouraging to observe the paucity of

research on vocabulary instruction for students with learning disabilities in recent years” (p 320).

Similarly, more studies should include a range of age and ability levels. There is easily retrievable information about students’ reading abilities at the elementary level but less for the upper grades. The same is true for low achievement at the higher-grade levels. Research should consider that some high school students are still trying to learn basic facts much like the elementary grades while they are learning the content area of their age group (Kim, 2006). Technology “enables students with LD to access content information in a manner that allows them to minimize learning deficits while maximizing strengths” (Twyman, 2006, p 5).

Technology requires the teacher to understand how it works and the different ways technology can be used. It takes time to learn a program well enough to teach it to others and allow the students to be comfortable with learning from it. They must first learn the program and then learn the content. Programs available on the Internet change daily. It does take effort from the teacher or student to keep up with the changing information.

Finally, it is necessary to also consider the cost and availability of technology in the educational setting. Jitendra et. al. (2004) explains, “Access to computers, cost of software, teacher knowledge of effective software programs, time involved to instruct (e.g. keyboarding skills) and manage student behavior...” (p. 320). Quizlet is a free program, but it might someday change and become available for purchase only. Education needs to advance with the changes of the world to best prepare students for success after high school. Research should continue looking at how technology can best be used to serve students at all levels and with all abilities keeping in mind availability and cost effectiveness.

Future research should continue looking to technology for ways to help increase achievement for students with learning disabilities. IDEA requires the IEP team to consider technology when assessing the needs of a student with a learning disability. Educators and IEP teams should consider the outcome of this research and previous research when planning meaningful lessons for students with learning disabilities. Technology could be the motivation for students to continue practicing necessary vocabulary until mastered. It might be the answer to having only one teacher to a class full of students who need their education individualized to their specific needs in order to achieve their ability level and grow educationally. Technology might be the equalizer for students with learning disabilities.

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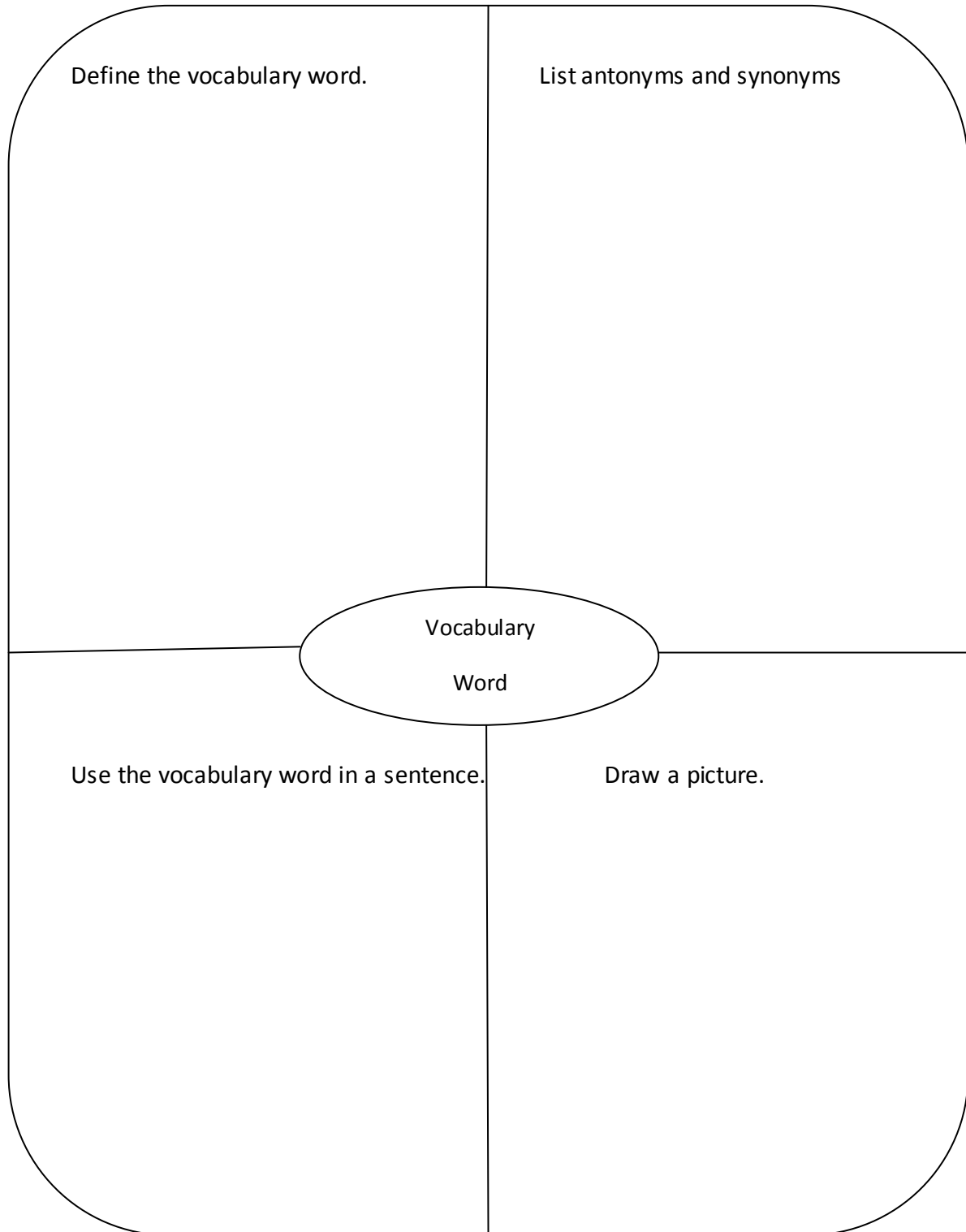
Appendices

APPENDIX A

SS Word	Definition	Antonym	Synonym	Sentence
Boundary				
Tradition				
Restore				
Tolerant				
Oppose				
Burden				

APPENDIX B

Adapted Frayer Model



APPENDIX C

Pre Survey

Students will answer by circling 1, 2, or 3.

1. I prefer studying vocabulary using flashcards. (word and definition) 1 2 3
2. I prefer studying vocabulary using computer based program. 1 2 3
3. I prefer studying vocabulary by looking at pictures of the word. 1 2 3
4. I prefer studying vocabulary by memorizing the definition. 1 2 3
5. I learn vocabulary best when I use a computer based program to help me. 1 2 3
6. I learn vocabulary best when I memorize the definition without using a Computer based program. 1 2 3
7. I prefer using a computer based program rather than not using a computer based program 1 2 3
8. Computer based programs help me learn vocabulary. 1 2 3
9. I have used computer-based programs in the past to learn vocabulary. 1 2 3
10. I have used the Frayer Model to learn vocabulary. 1 2 3

Post Survey

Students will answer by circling 1, 2, or 3.

1. I prefer studying vocabulary using flashcards. (word and definition) 1 2 3
2. I prefer studying vocabulary using computer based program. 1 2 3
3. I prefer studying vocabulary by looking at pictures of the word. 1 2 3
4. I prefer studying vocabulary by memorizing the definition. 1 2 3
5. I learn vocabulary best when I use a computer based program to help me. 1 2 3
6. I learn vocabulary best when I memorize the definition without using a Computer based program. 1 2 3
7. I prefer using a computer based program rather than technology. 1 2 3
8. Computer based programs help me learn vocabulary. 1 2 3
9. I have used computer based programs in the past to learn vocabulary. 1 2 3
10. I have used the Frayer Model to learn vocabulary. 1 2 3