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USING TECHNOLOGY AS AN INDEPENDENT LEARNING STRATEGY TO  
SUPPORT VOCABULARY ACQUISITION FOR  
SECONDARY STUDENTS WITH LEARNING DISABILITIES

A dissertation submitted in partial fulfilment  
of the requirements for the degree of  
DOCTOR OF PHILOSOPHY  
to the faculty of the Department of  
EDUCATION SPECIALTIES  
of  
THE SCHOOL OF EDUCATION  
ST. JOHN'S UNIVERSITY

New York

by

Donna Marie Egan

Submitted Date: July 30, 2019

Approved Date: July 30, 2019

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Donna Marie Egan

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Dr. E. Francine Guastello

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## ABSTRACT

### USING TECHNOLOGY AS AN INDEPENDENT LEARNING STRATEGY TO SUPPORT VOCABULARY ACQUISITION FOR SECONDARY STUDENTS WITH LEARNING DISABILITIES

Donna Marie Egan

Students at the secondary level encounter a plethora of content-rich, content-area texts. To achieve comprehension of these content-area texts, students are required to know the meanings, relationships, and contextual interpretations of each new vocabulary word. Students, especially exceptional students (those who have an Individualized Education Plan), struggle with academic demands, challenges of tiered vocabulary, and the lack of comprehensive vocabulary instruction. Researchers have examined the outcomes of computer-assisted instruction on exceptional students' vocabulary development using various technology. To meet the critical academic vocabulary acquisition needs of secondary students with exceptionalities, research encourages using technological applications as independent word-learning strategies. This research study, grounded within Piaget's Constructivism Theory, as it interweaves with Mayer's Theory of Multimedia Learning and the essential tenets of vocabulary instruction, investigates the effects of using a laptop-based intervention on the vocabulary knowledge of 11<sup>th</sup> and 12<sup>th</sup>-grade students with exceptionalities. A single-subject, non-concurrent baseline design was used to examine the impact of using a laptop-based intervention.

## DEDICATION

This dissertation is dedicated to my father, Jack Egan, in memoriam.  
His motto “To whom much is given, much is expected” (Luke: 12:48)  
guided the exemplary accomplishments throughout his life  
and continues to guide me throughout mine.

## ACKNOWLEDGMENT

“The key to realizing a dream is to focus not on success but significance, and then even the small steps and little victories along your path will take on greater meaning” (Oprah Winfrey). There are many individuals I must acknowledge in the realization of this dream; the completion of my dissertation.

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stand today. And finally, Nelson, whose endless supply of love, encouragement, and gourmet food, kept me sufficiently nourished throughout this journey.

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## CHAPTER ONE

### Introduction

Vocabulary knowledge is one of the essential components of literacy achievement. Vocabulary knowledge, both oral and written vocabulary, is critically important for a student's success in school and beyond (Kamil et al., 2008). Research has supported the importance of providing explicit vocabulary instruction, not only in improving students' reading comprehension and writing quality but also their listening and speaking vocabulary (Joshi, 2006; Kame'enui & Baumann, 2012). Direct classroom instruction to often, does not provide adequate time for students to remember, understand, apply, analyze, and evaluate new vocabulary words. Direct vocabulary instruction is undoubtedly essential, yet research indicates that a student, with a well-developed vocabulary, learns many more words indirectly through reading than from classroom instruction (Cunningham & Stanovich, 1998; Nagy & Herman, 1984). Bryant, Goodwin, Bryant, and Higgins, (2003), summarized twenty-five years of vocabulary intervention research, calling attention to the unique challenges faced by secondary students with exceptionalities, both struggling readers with 504 Accommodation Plans and students with Individualized Education Plans (IEP) with a classification of Learning disability (LD). Bryant et al., (2003) recommended that for these students, vocabulary knowledge is not equal to their general education peers due to their lack of independent word-learning strategies. Today, in the 21st Century, technology is a dominating force; however, its influence has yet to be completely understood in the field of Education (Alemu, 2015). During the 2014 Future of Education Technology Conference (FETC), CEO Julie Evans revealed major technological trends identified in a 2013 Speak Up

Survey from Project Tomorrow. Evans claimed that 89 percent of high school students have access to Internet-connected smartphones, and 60 percent have access to personal computers (Riedel, 2014). Technological devices, such as personal computers, tablets, and cell phones, are now being utilized by students as mobile learning tools, thus transforming their learning practices. Technology and technological devices must be used by educators to motivate and engage students in the development of their literacy, vocabulary, and language skills. Instructional technology, such as applications (apps) found on the Internet, is beneficial for all students because these apps individualize learning and customize instruction to meet a student's unique needs and rate of learning (Dikusar, 2018). An app is any program or group of programs, designed for the end-user (Karch, 2019). Application software includes such things as database programs, word processors, Web browsers, and spreadsheets. Also, technology motivates students to be more engaged in reading and learning, especially when they interact with the text using interactive technological tools (Traore & Kyei-Blankson, 2011; Ware, 2008). Based upon the engaging, repetitive, multi-modal nature of technological tools available in the 21st Century, vocabulary apps on a student's personal computer, used as independent word-learning strategies, can provide educators with a powerful tool to support direct instruction and foster vocabulary development for all students, especially those who are struggling readers and learning disabled.

## **Background and Rationale**

### **What is Vocabulary Development?**

Vocabulary development is the foundation for learning any language; it is the process of acquiring new words to use in daily life. Vocabulary development concentrates on helping students learn the meaning of new words and concepts in various contexts and across all academic content areas. Teaching students to develop vocabulary means providing explicit instruction on essential words from the text, as well as providing them with strategies to support learning word meanings independently. Vocabulary is acquired incidentally, through indirect exposure to words and intentionally, through explicit instruction in specific words and word-learning strategies (Alemi & Taxebi, 2011). As students grow older, it is critical for both their oral and written vocabulary to expand, thus allowing them to comprehend increasingly more complex grade-level text (Kamil et al., 2008; Loftus & Coyne, 2013). What are the challenges to vocabulary development for students who are struggling readers and classified with a learning disability?

### **Challenges for Struggling Readers and Students with Learning Disabilities.**

A struggling reader is a student who has been identified, through standardized assessments, as reading below their current grade level. He/she has trouble when reading grade-appropriate texts. The National Joint Committee on Learning Disabilities (NJCLD) defines Learning Disabilities (LD) as a general term that refers to a mixed group of disorders revealed through substantial difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities (American Speech-



Language-Hearing Association, 1991). According to the US Department of Education, in 2013–14, the number of children ages 3–21 receiving special education services was 6.5 million, or about 13 percent of all public-school students. Among students receiving special education services, 35 percent had specific Learning Disabilities, making LD the largest category within the 13 Special Education classifications (IES, 2016).

Students with LD have difficulties with both short-term and long-term memory; therefore, they have unique challenges with regards to metacognition. Metacognition, the ability to think about one's own thinking, is critical to learning, memory, and academic achievement (Sperling, Richmond, Ramsay, & Klapp, 2012). Lack of metacognitive skills affects students' abilities to recognize task requirements, select and implement appropriate strategies, and monitor for comprehension (Hallahan, Kauffman & Pullen, 2012). Reading comprehension affects every academic subject in school and poses the greatest difficulty for most students with LD. Studies have confirmed that there is a solid connection between vocabulary knowledge and reading comprehension. (Baumann & Kame'enui, 2004). Students, who have an innate difficulty in learning from texts, are at a significant disadvantage in finding academic success (Roberts, Torgesen, Boardman & Scammacca, 2008).

Students at the secondary level encounter a plethora of content-rich, content-area texts. To achieve comprehension of these content-area texts, they are required to know the meanings, relationships, and contextual interpretations of each new vocabulary word (Bryant et al., 2003). Evidence-based classroom strategies, such as cooperative learning, direct instruction, and scaffolded instruction (“32 Research-based Instructional Strategies,” 2017), have been infused into traditional class instruction as a direct result of

research completed in this area, yet learning-disabled secondary students are still struggling to acquire mastery with regards to the content-heavy texts that are used within their classrooms. Vocabulary development, especially for students with Learning Disabilities, is affected by the number of experiences and opportunities they are given to learn new words. As Kennedy, Deshler and Lloyd (2015) noted, “given traditional general education instructional settings at the secondary level, it is unlikely a student with LD, who struggles with reading, will receive the type and amount of evidence-based reading instruction needed to improve reading skills and make progress within the content’s standards” (p.23).

### **Challenges of Tiered Vocabulary.**

Beck and McKeown (1987) developed the concept of “word tiers. “According to Beck and McKeown, there are three types of vocabulary words; three tiers of vocabulary: a word’s frequency of use, complexity, and meaning regulates into which tier the word falls. Tier one consists of basic words such as boy, cat, run, and red. These words seldom require direct instruction and typically do not have multiple meanings. Tier two consists of high frequency, multiple-meaning vocabulary words, and Tier three consists of low-frequency, context-specific vocabulary words. Tier two and three words create a student’s academic language, which are words most commonly used within the school setting. Academic language is often viewed as a second language because all literate people must learn it to enable them to access educational content (Solomon & Rhodes, 1995). Although we learn oral language, that allows us to speak with one another, learning an academic language is far more complicated because it involves language not customarily used in oral speech (Fang, Schleppegrell, & Cox, 2006; Zwiers, 2007). Beck

and McKeown (2008) explained, “Tier two words are the words that characterize written text but are not so common in everyday conversation. What this means is that learners are less likely to run into these words as they listen to daily language. The opportunities to learn Tier two words comes mainly from interaction with books. Also, because getting meaning from written context is more difficult than getting meaning from oral contexts, learners are less likely to learn Tier two words on their own in comparison to the words of everyday oral language” (p.7-8). Secondary students, especially those with LD, struggle to increase their knowledge of content-specific Tier two and Tier three vocabulary words, this is often due to poor memory skills, the lack of direct instruction or the ineffective use of word learning strategies (Beck & McKeown, 2002). A well-developed vocabulary has long been documented as crucial for success in reading, and research has repeatedly acknowledged that vocabulary size is one of the strongest predictors of reading development (National Institute of Child Health and Human Development, 2000). A limited vocabulary is a significant obstacle to the critical literacy skills required of students in secondary schools.

### **Challenges resulting from the Implementation of the Common Core Standards of Education.**

In 2009, the Common Core Standards of Education (CCSE) were implemented in the United States, and New York State adopted in 2011. According to the NYS Board of Education “The Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects (“the Standards”) are the culmination of an extended, broad-based effort to fulfill the charge issued by the states to create the next generation of K–12 standards in order to help ensure that all students are

college and career ready in literacy no later than the end of high school” (CCSE, 2010). Common Core Curriculum Standards (CCCS)’s development/implementation neglected to make provisions for special-needs services, which in turn significantly increased the achievement gap for millions of children who have mental, emotional or physical disabilities that affect their classroom learning. In 2017, NYS implemented a revised CCCS, yet these standards still in place in 36 states across the US, thus marginally increasing the achievement gap for students with disabilities each year (edweek.org, 2018). Those opposed to the CCCS argued that implementing this national program created a “one-size-fits-all framework” (Halladay & Moses, 2013, p. 33) that stands in grave contrast to the diverse nature of students in schools throughout the United States. The standardized nature of the CCCS assumes all students begin their academic career at the same academic level and will complete it having mastered the same academic standards at the same rate (Tienken, 2011). Research collected on reading ability, using a longitudinal study of students with disabilities aged 7 to 17, found this assumption to be false (Wei, Blackorby, & Schiller, 2011). Students, classified with a disability that negatively affects their academic performance, are expected to meet the same increased educational rigor that their classmates without disabilities must meet (Kirkland, 2011). Haager and Vaughn (2013) maintained that the increased academic expectations of the CCCS are negatively affecting the potential for students with disabilities to graduate from high school.

There is currently a paucity of research regarding the long-term effects of implementing the CCCS on students with disabilities, yet Beals (2014) addressed the implications of these standards, with specific reference to students with LD. Beals stated,

“though most Common Core goals are abstract and schematic, collectively they constitute a one-size-fits-all approach that, in practice, has severely straight jacketed America’s special-needs students” (p.1). Beals further asserted “now that this general curriculum is being shaped by dozens of grade-specific Common Core standards, and that teachers (including special education teachers) are increasingly expected to align each day’s lesson with one or more of these standards, there’s even less room for remediation or acceleration” (p.1). Data from the 2014 National Assessment of Educational Progress (NAEP) indicated that in the US, only 36% of eighth-graders read at a basic level, with vocabulary cited as one of the primary barriers to reading comprehension; schools with the highest concentration of special-education students saw a 64 percent decrease in reading scores and a 72 percent decline in math scores (NAEP, 2014). Beals (2014) highlights most educators’ concerns when attempting to differentiate instruction for their struggling readers and at-risk students; how can they support their exceptional students when their classroom functions under ‘one-size-fits-all’ guidelines and ignores the skill levels and specific needs of these learners?

### **Lack of Comprehensive Vocabulary Instruction.**

Kennedy, Deshler, and Lloyd (2015) stated: “For students with Learning Disabilities both direction in word meanings and building capacity through the use of strategies are generally needed for successful learning” (p.23). Stanovich (1986) sheds light on the pivotal issue of adolescents who choose not to read independently. These students go to great lengths to comprehend content-related texts. Stanovich stated students who perform at lower levels than their more skilled peers in vocabulary knowledge would fall further and further behind their general education peers as they get

older (1986). Building upon the foundational ideas of Stanovich and Hirsh (2003) research suggests that struggling readers encounter difficulty with classroom texts because comprehension of such texts requires content-specific prior knowledge. The analysis of Faggella-Luby and Deshler (2008) points to direct instruction as well as activity-based and computer-assisted methods as effective ways to improve vocabulary acquisition. Textbooks used by secondary students often provide too little support for students with LD, as these students may require multiple exposures, in various formats to develop deep meaning and achieve understanding (Roberts et al., 2008). Sharon Vaughn (2008) stated, “differences in depth of understanding are related to the number of times and the variety of contexts in which a word is encountered and used” (p.19). Vaughn and others wrote this brief to “provide schools, districts, and states with background knowledge about best practices for older students who struggle to read. It focuses on the reading skills that adolescents need to more fully access content-area curricula and, in turn, secure a productive future” (Boardman, Roberts, Vaughn, Wexler, Murray, Kosanovich & Center, 2008, p.1).

According to Hallahan, Kauffman, and Pullen (2012) in their book entitled *Exceptional Learners*, in 2000, the National Reading Panel synthesized research on how children acquire reading and best practices for reading instruction (National Institute of Child Health and Human Development, 2000). This report identified the five essential components of effective reading instruction, one of which was vocabulary instruction. These authors suggested that research-based strategies, such as content enhancement, graphic organizers, mnemonics, task analysis, direct instruction, and peer tutoring, should be used as for classroom instruction, to support students with LD. Students with LD make

up the largest category of special education students. Due to the low occurrence of behavior problems in most LD students, they usually receive instruction in full-inclusion settings, thus alongside their general education peers (Hallahan et al., 2012).

### **What is Effective Vocabulary Development?**

According to Graves (2000) there are four components of an effective vocabulary program: wide or all-embracing independent reading to expand word knowledge, instruction in specific words to enhance comprehension of texts containing those words, instruction in independent word-learning strategies and word awareness and word-play activities to motivate and augment learning (Graves, 2000). Technology addresses each of Graves' components due to its engaging, repetitive, multi-modal capabilities.

Technology provides the ability to customize learning to support each user's unique learning needs. Also, technology provides students with a sense of personal responsibility and control. If the student feels confident in his or her ability to perform well on an academic task in a risk-free environment, the student will more likely try to complete the task independently (Clark, 2013). The ability of a learner to work effectively and independently while still gaining meaning is student-centered and promotes learner independence. Customized instruction for struggling readers and students with LD will lead to learner independence (Padron & Waxman, 1999; Proctor, Dalton, & Grisham, 2007).

## **Purpose of the Study**

The purpose of this research study is to examine the use of technology, as an independent learning strategy, when attempting to develop the academic vocabulary of students who are struggling readers or those who have been classified with a learning disability (LD). The research of Bryant et al. (2003) supports this examination when indicating that for secondary students with LD, vocabulary knowledge is not equal to their general education peers due to their lack of independent word-learning strategies. These researchers stated, “the challenge is to identify methods that effectively teach students with LD how to process and comprehend unknown word meanings” (Bryant et al., 2003, p.118). Upon completion of their research synthesis, these researchers suggest “for students who require additional practice beyond what teachers can reasonably provide, computer-assisted instruction (CAI) is a promising tool that can be used independently by students for practice opportunities” (Bryant et al., 2003, p.127).

Based upon the engaging, repetitive, multi-modal nature of technological tools, vocabulary strategies and activities completed using technology, could be the way with which educators support the use of independent word-learning strategies for students with LD. What becomes apparent when reviewing the educational research completed within this arena, is the need to delve deeper into the use of computer-assisted instruction (CAI) as a means to foster vocabulary development and literacy achievement for struggling readers and students with LD. To meet the critical vocabulary acquisition demands of secondary students with LD, research must be completed investigating the use of a vocabulary application on the student’s personal computer as an independent word-learning strategy to assist in the development of their academic language.



## Theoretical Framework

The theoretical framework provides the structure for this study and supports its rationale, the problem statement, the purpose, the significance, and the researcher's questions. Lysaght (2011) highlighted the necessity of identifying one's theoretical framework for a dissertation study:

A researcher's choice of framework is not arbitrary but reflects important personal beliefs and understandings about the nature of knowledge, how it exists (in the metaphysical sense) in relation to the observer, and the possible roles to be adopted, and tools to be employed consequently, by the researcher in his/her work" (p. 572).

This research study is grounded within Piaget's Constructivism Theory as it interweaves with Mayer's Theory of Multimedia Learning and the essential tenets of vocabulary instruction.

John Dewey is known as the father of Progressive Education, which was defined as an educational movement from the 19<sup>th</sup> Century, that gave more value to experience than formal learning. It was based on experimental learning that concentrates on the development of a child's talents. Dewey stressed that the education system's focus must be on fostering productive citizens more so than creating academic scholars. The primary tenant of Dewey's thinking was that education should be student-centered; focusing on the student and how they learn. He suggested that students learn through their own experiences, thus learning is an active process. Dewey is also considered the philosophical founder of the Constructivist Theory of Learning (Dewey, 1963). Jean Piaget, building upon Dewey's ideas, solidified what is now known as the Constructivist

Theory, affirming its primary tenant that learning is an active process; an individual constructs new knowledge based on two ideas; accommodation and assimilation. Piaget asserted that schema, containing units of knowledge, is the basic building block of intelligent behavior and provides a way for humans to organize knowledge. Assimilation occurs when using existing schema to deal with a new object or situation.

Accommodation happens when the existing schema does not work and needs to be changed to deal with a new object (McLeod, 2018).

Mayer's Cognitive Theory of Multimedia Learning finds its origins in Piaget's assertion that an individual constructs new knowledge through accommodation and assimilation. Mayer's philosophy is based on three main assumptions, two of which are: there are two separate channels (auditory and visual) for processing information; there is limited channel capacity; and that learning is an active process of filtering, selecting, organizing, and integrating information (Mayer, 2012). Mayer's principle, known as the "multimedia principle," states that "people learn more deeply from words and pictures than from words alone" (p. 47). However, simply adding words to pictures is not an effective way to achieve multimedia learning. The goal, therefore, becomes how to utilize technology to provide effective multimedia instruction in light of how the human mind works. Researchers Seels and Richey (1994) stated:

Technology includes tools, processes, applications, skills, and organization.

Technology in education or instruction is more than the technical implementation of tools, machines, computers, products, and communication systems (such as multimedia, computerized instruction, games, simulations, or interactive video). It

also encompasses the application of the principles of science to solve learning problems (p.6).

Technological tools can provide educators with innovative ways to deliver instruction, yet in choosing the most effective media, software, and the device is essential (Ghavifekr & Rosdy, 2015). Educators are required to utilize the primary tenets of effective vocabulary instruction as the lens with which they evaluate these tools. A review of research on vocabulary instruction supports education that presents words in a variety of context, provides multiple exposures, and promotes students' active processing of new meanings and confirms the limited effectiveness of teaching that focuses narrowly on dictionary definitions (Beck, McKeown, & Kucan, 2013; Stahl & Fairbanks, 1986). Graves (2000) stressed the idea that "one size does not fit all" with regards to teaching word meanings. Teachers must vary their approach to teaching word meanings based on the nature of the target words (Graves 2009; Stahl & McKenna 2006). Vocabulary instruction needs to be multifaceted, incorporating the teaching of individual words, the development of word-learning strategies and the fostering of word consciousness (Baumann, Ware, & Edwards, 2007; Graves, 2006).

## CHAPTER TWO

### Review of Related Research

Computer-assisted instruction (CAI), computer-based instruction (CBI), computer-based learning (CBL) and computer-based teaching (CBT) are all terms used to describe a type of educational technology that delivers focused instruction through the use of 21st-century computer-based technologies (Weng, Maeda and Bouck, 2014). For this literature review, CAI is used for all the terms listed above. Students can engage with CAI through mobile technological tools such as iPads, cell phones, tablets, and personal laptop computers. These technological tools can be used, both within and outside of the classroom setting, for collaboration, communication, creativity, critical thinking, feedback, innovation, presentation, problem-solving, productivity, reflection, and social networking. “The use of computer technology in education entered into a new era since the introduction of mobile tablet computers” (Weng et al., 2014, p.168). Mobile tablet computers offer users easy access to cost-efficient applications (apps) such as *Vocabulary.com*, *Dictionary*, *Thesaurus*, and *Quizlet*, all of which provide greater depth of understanding, with regards to vocabulary acquisition, for students with LD. (Douglas, Wojcik and Thompson, 2012). Access to these apps, through mobile devices, provides users with the potential benefits of built-in and immediate feedback, improved motivation, and embedded strategy instruction. Due to the repetitive nature of these educational apps, students can visualize and comprehend the meaning of new words while engaging with them multiple times in a variety of multi-media contexts.

### **Use of Technology to Support Comprehensive Vocabulary Instruction.**

Researchers have examined the outcomes of CAI on LD students' vocabulary development using various technology. For example, Kennedy, Thomas, Meyer, Alves, and Lloyd (2014) utilized a multimedia-based researcher-created instructional tool called Content Acquisition Podcasts (CAPs) to provide vocabulary instruction to secondary students with and without disabilities. CAPs, one to three-minute instructional podcasts, infused with content-specific instructional practices, were used to provide additional support for thirty-two students with disabilities (SWD) and one hundred and nine students without disabilities in a general education 10<sup>th</sup>-grade World History class. "Approximately 84% of the SWD were individuals with specific LD" (Kennedy et al., 2014, p.77). Curriculum-based measurement (CBM), over eight weeks, was used to assess the effectiveness of using this supportive technology. The results of this study revealed that students, with and without disabilities, made significant growth on CBMs and scored significantly higher on posttest when using CAPs (Kennedy et al., 2014). In 2015, Kennedy, Deshler, and Lloyd presented the results of their replication extension experiment using CAPs as an instructional strategy for building vocabulary knowledge in secondary learners with and without LD. CAPs were used to provide additional support for 279 urban high school students, thirty of whom had an Individualized Education Plan (IEP) indicating LD in a general education 10<sup>th</sup>-grade World History class. "All students in the LD group had an IEP stemming from a diagnosis of specific learning disability related to reading, which manifests as difficulty conducting cognitive processes necessary for reading" (Kennedy et al., 2015, p.28). Instruction, using CAPS, was studied over three weeks and occurred at individual computer terminals. Curriculum-based

measurement (CBM) was used to assess the effectiveness of this supportive technology. The results of this study revealed that students, with and without disabilities, made significant growth on CMBs and scored significantly higher on posttest when using CAPs (Kennedy et al., 2015). Kennedy et al. (2015) suggested: “This study provides preliminary evidence that extends existing theories of multimedia learning and evidence-based practices for vocabulary instruction into new space in the name of augmenting academic skills and outcomes for all students” (p.35). In both studies, Kennedy et al. (2014/2015) presented positive results thus supporting the use of CAI to address the individual learning needs of students with LD, especially with challenging content-specific coursework at the secondary level. Kennedy’s research supports the notion that using mobile technology to augment classroom instruction has a positive effect on academic achievement, especially for students with special needs.

The technology used in Kennedy et al. studies was CAPs, accessed through individual computer terminals. Melhuish and Fallon (2012), clarified the difference between m-learning and e-learning, thus identifying mobile technology as a potentially useful educational tool. They stated “the ability to learn within one’s own context when on the move in time and space, is arguably the central learning affordance of mobile technologies” therefore m-learning (mobile learning) is “the learning experiences that are affected when an individual negotiates meaning for themselves, on their own or collaboratively, using their own device in a situated context” (Melhuish and Fallon, 2012, p.3-4). The authors outline the five unique affordances that mobile devices offer the field of Education. They indicate that mobile devices are considered the tools of choice for students receiving special education services due to not only their size but more

importantly its capacity to access several different educational apps that can be used for supplementary instruction. Another additional advantage discussed within Melhuish and Fallon's research is that students with disabilities can adapt usage of the apps on their mobile devices to fit their unique personal learning needs (Melhuish & Fallon, 2012).

### **Use of Applications on Mobile Devices to Support Vocabulary Acquisition.**

Twenty-first-century advances in technology are made at such a rapid pace that individuals are often "out of breath" in their efforts to keep up. Just when one becomes comfortable with the newest technological "gadget," a more improved version arrives on the scene. Technology has, and always will be, many steps ahead of research focusing on the potential benefits of its use within educational settings. "Few studies of the use of the iPad in the classroom exist that present actual data examining the effect on student achievement" (Retter, Anderson and Kieran, 2013). Even though, Jonassen and Reeves (2004) proposed technology has significant potential to be an enabler for authentic learning through its use as a cognitive tool, little research has been completed delving deeper into the potential academic benefits of using mobile devices in educational settings. Roberts et al., (2008) stated "experimental research is sparse on effective vocabulary instruction with older students identified as having LD, due partly to the nature of vocabulary learning and to the difficulty of reliably measuring improved vocabulary." Research, by such authors as Hutchison, Beschorner and Schmidt-Crawford (2012), Sheppard (2011), Harmon (2012) and Retter, Anderson, & Kieran (2013) have begun to set the stage for the critical need of more intense and focused research studies in the use of apps on mobile technology to support vocabulary advances for struggling learners.

Hutchison et al. 2012 research, focused on examining how apps on the iPad can support classroom teachers in meeting curricular goals while engaging their students. “The purpose of their exploratory study was to understand the viability of using iPads to support and enhance literacy instruction” (Hutchison et al., 2012, p.17). A fourth-grade teacher, during a three-week project, used iPad apps such as *Popplet*, *Doodle Buddy*, *Strip Design* and *Sundry* to enhance students’ learning opportunities, thus hoping to increase her students’ literacy skills and build new literacy skills associated with 21st-century technology. Upon conclusion and successful outcomes of their research, Hutchison et al. proposed that “digital technology should [be used to] enhance curricular goals and support learning in new and transformative ways” (Hutchison et al., 2012, p.23).

In a middle school setting, classroom teacher/researcher Dale Sheppard completed an eBook project with his class to explore the use of an iPad as an eBook reader within his 6th-grade class. Data was collected on each student before and after they read two prescribed texts; one was using the iPad, one using printed text. The project made use of qualitative data collection methods, including formal and informal interviews and attitudinal surveys. Quantitative data (pre and post-testing) was also collected and used for statistical analysis. Quantitative tests did not indicate a statistically significant change, yet students participating in the study reported an increase in engagement while reading. (Sheppard, 2011).

Harmon (2012) indicated that “at-risk” students who used the iPad to access intensive vocabulary apps had a 6 to 8 percent greater chance of passing the reading portion of the Ohio Graduation Standard Assessment. Harmon’s sophomore students



used apps on the iPad such as *WorldFlick*, and *Words with Friends* for vocabulary support, *Puppet Pals* and *ToonTastic* for aid in visualizing literature, and *StoryRobe* and *Strip* for help with story retelling, to achieve full grade level advances in language usage.

In an action research study, using data collected from thirteen, 9th grade, special education students in self-contained English class, Retter et al. (2013) investigated the effects of using the *Flashcard* application on the iPad2 to support advances in vocabulary and the *BlueFire* application to support increases in fluency. The results of their study indicated minimal gains in the total number of vocabulary words learned and significant gains in reading comprehension scores. The assessment procedure within their research made it impossible to determine which applications on the iPad2 had more of an effect on students' progress (Retter et al., 2013). All the preliminary research reviewed indicate gains in student achievement using apps on mobile technology. This research bursts opens the door demanding deeper probes into the use of apps on mobile devices to “level” the playing field for exceptional learners, yet researchers must carefully examine and investigate multiple mobile apps before selecting one that will provide their desired outcomes.

### **Selection of Effective Applications.**

In 2019, finding good quality education apps, that enhance research, teaching, and learning can be an intimidating task, mainly when one takes into consideration, there are over 500,000 educational apps (“Apps for Education,” 2019). While investigating the use of an app to improve the academic vocabulary of Emirati students who attend English foundation programs in the United Arab Emirates, Bowles (2012) concluded “the use of a generic vocabulary learning app over a four-month period [did] not lead to a significant

increase in most students' vocabulary size" (p.241). Bowles then became part of a team that developed and built a new, customized app to address the specific needs of Emirati students to assist them in reaching their required vocabulary learning goals. When researching the use of mobile application systems (apps) to enhance vocabulary development for distance-learning students in South Africa, researchers Makoe and Shandu explored the best app for the delivery of vocabulary learning. They too eventually became part of a team and developed an app named *VocUp*. This app was generated using the three principles of vocabulary development: explicit teaching and learning, practice through repeated exposure and repetition, and assessment (Makoe & Shandu, 2018). Upon testing and implementation of the *VocUp* app, these researchers concluded mobile apps are most effective if they acknowledge contextual variables, provide options for independent study and interaction, and are flexible and accessible.

In a three-week study, focused on building the vocabulary of 25 high-school students, researchers Redd and Schmidt-Crawford utilized a gaming app called the *Vocab Challenge*. This app supports mastering specific words in a variety of contexts such as definitions, synonyms, antonyms, and connotations. "Their study examined how a mobile learning device along with a vocabulary app, might establish a rich gaming environment that was conducive to acquiring words most frequently found on the Scholastic Assessment Test (SAT) taken by high-school students" (Redd & Schmidt-Crawford, 2011, p.55). The results of this study, though limited due to duration time, indicated that a gaming app could provide a vocabulary learning experience by promoting informal learning, mastery learning, linking one experience to another and engagement. Abrams and Walsh continued to investigate how apps, using gamified practices, can be used to

support adolescents' acquisition of academic vocabulary. Working with 15-20 adolescents, the majority of whom were English Language Learners, the researchers created custom word lists, from their class readings, in an app entitled *Vocabulary.com*. Researchers, using "The Challenge" feature within this app were able to engage students in a competitive word learning experience. The interactivity and extended engagement created by *Vocabulary.com* provided teachers with another way to engross students in learning academic vocabulary. One student within this study stated "I think I have the tools and skills to teach myself vocabulary because I can use *Vocabulary.com* as a game to learn vocabulary because its fun and entertaining so I learn better when I'm using an interactive source rather than simply making flashcards" (Abrams & Walsh, 2014, P. 53). Upon conclusion of their research, Abrams and Walsh (2014) suggested that contemporary education should include multimodal vocabulary instruction that binds both in-school and out-of-school experiences and nurtures more individualized, student-driven learning that empowers students to be managers of their own knowledge (Abrams & Walsh, 2014).

What becomes apparent, when reviewing the research completed using technology to support comprehensive vocabulary instruction, is the need to delve deeper into the use of educational vocabulary applications, on mobile devices, to foster vocabulary development and literacy achievement for struggling readers and students with LD. To meet the critical vocabulary acquisition demands of secondary students with LD, research must be completed investigating the use of a vocabulary application, *Vocabulary.com*, as an independent word-learning strategy, on a student's school-issued Chromebook, to assist in the development of their academic language.

## Research Questions

1. What are the effects of using the vocabulary application *Vocabulary.com*, on a student's school-issued Chromebook, on the vocabulary knowledge of 11<sup>th</sup> and 12<sup>th</sup>-grade students with Learning Disabilities?
2. Do students like using *Vocabulary.com* as an independent learning strategy, and would they continue to use this application when attempting to learn new vocabulary words?

## CHAPTER THREE

### Research Design and Methodology

A single-subject, non-concurrent baseline design with a maintenance phase was used to investigate the effects of using the app, *Vocabulary.com* on students' school-issued Chromebook, on the vocabulary knowledge of 11th and 12th-grade students with LD. The selection of this single-subject design tactic is in line with Horner, Carr, Halle, McGee, Odom, and Wolery, (2005) as they suggest "single-subject research methods offer a number of features that make them particularly appropriate for use in special education research" (p.174). The beneficial features of this design selection, as outlined by Horner et al. (2005), includes the ability to focus educational research on an individual, within typical educational conditions, in a cost-effective manner that, when applied across multiple students, can be used to guide large-scale policy directives. Upon evaluating nonconcurrent multiple baseline designs, Harvey, May, and Kennedy (2004) stated:

"Nonconcurrent multiple baseline designs stagger the timing of baseline-to-intervention changes across various entities, but the baseline and intervention phases are not contemporaneous across each of the tiers. Although considered less rigorous than concurrent multiple baseline designs, nonconcurrent designs have a degree of flexibility that may allow for their use in studying complex social contents, such as educational settings, that might otherwise go unanalyzed" (p.1).

A maintenance phase was added to this design to establish the permanency of the intervention effects. The researcher returned to the research site three weeks after the conclusion of this study and collected data from each student participant. These data points indicate that the intervention had been sustained over time; therefore, it must have some qualities that are consistent with what is meant by social validity (Kennedy, 2005). Social validity is addressed when participants continue the use of *Vocabulary.com* to support vocabulary development over time, investigating the degree to which the effects of using an app to support vocabulary acquisition are sustained over time. Qualitative data was collected during this study in a survey completed by student participants after each instructional week (see Appendix A). This data was used to address research question #2, whether students like using *Vocabulary.com* as an independent learning strategy and would they continue to use this application when attempting to learn new vocabulary words.

### **Setting**

This study took place in four resource room support classes in a suburban school in Suffolk County, New York. The public education school teaches grades 7-12 with an enrollment of 683 students (2018). The school population is culturally and linguistically diverse. The school serves students from middle to low-income households, and minority enrollment is 57%; 54% Hispanic, 43% White, 53% of the student body is eligible for free or reduced lunch. There are equal percentages of males and females; 47% female, 53% male. The school is nationally ranked #2786 and #237 among New York High Schools. The school has a 90% graduation rate, with math proficiency scores of 78% and

reading proficiency 85%. This research study was conducted during a 17-week instructional period.

### **Participants**

Participants in this study included seventeen students in four resource room classes and three special education teachers. The researcher and special education teachers acted as the interventionist for this study. Data was collected for all seventeen participants, as per the District Superintendent's request that all the students enrolled in these four resource room support classes receive the vocabulary intervention. Data from eight students, two from each resource room Period, was used for data analysis purposes.

### **Initial Steps.**

The researcher sent letters to the Superintendents of three school districts in Long Island, New York, detailing her proposed doctoral study and requesting permission to complete research in their district's high school. Mr. C (hereafter all names are pseudonyms), Superintendent of the BH school district, promptly replied and was enthusiastic about the proposed research study and its completion in his district. Having recently purchased and distributed Chromebooks to all students in the BH school district, Mr. C was extremely interested in moving ahead with the researcher's proposed investigation. The researcher then met with Mr. P, Assistant Superintendent for Student Services at BH, to delve deeper into the proposed study and what would be required of the high school staff and students to complete this research. The high school chairpersons from both the English, Mr. A, and Special Education Departments, Mrs. D, joined the discussion, at which time it was suggested that the proposed vocabulary intervention be

given to all the students who had a resource room support class built into their daily schedules. These classes had a small number of students (Period 1: 3 students, Period 2: 5 students, Period 7: 5 students and Period 8: 4 students) and the purpose of this support class was to provide students with IEPs additional time to work independently with one-on-one assistance from a Special Education teacher.

### **Student Participant Selection Process.**

The researcher attended the four resource room classes and met with the students, to introduce herself, discuss the research; its purpose and required participation. She explained in detail what involvement in the study meant while stressing the importance of attendance during the study's data collection process. The meeting was informal, and students were encouraged to converse and ask questions. Parental and student consent forms were distributed to every student during these meetings (see Appendix B. 1& 2). Students were asked to confer with their parents and return the signed consent within four days. The researcher told the students that they would all be taking part in this vocabulary invention, but she could only use the data from their participation if the parental and student consent forms were signed. All 17 students returned their consent forms. Once parental consent was received, the researcher created a list of potential student participants. The list was given to the special education teachers who matched student names to their academic files, thus parsing the list down to only those students who meet the study's requirements. The criteria for student selection was (a) students in grades 11 or 12 with an Individualized Education Classification of Learning Disability (b) an attendance record of 90% or above to facilitate continuous data points (c) a word-reading standard score of 80 or above according to the Wechsler Individual Achievement Test-III



to ensure that students could participate in online reading, (d) at least one goal or objective written on the student's Individualized Education Plan (IEP) addressing reading comprehension, and (e) teacher confirmation via observation and progress monitoring notes that the student experienced persistent difficulty with comprehending informational text (Ciullo & Reutebunch, 2013). These steps were also completed by Mrs. D., the chairperson of the Special Education Department. The results of both were identical and thus provided selection validity. Eight students, who met the selection criteria outlined, were then randomly selected from the list of students.

Table 1.

*Student Profile Summary*

Student Name	*Age	Sex	Race	Resource Room Period	**Classification	Primary Language Home	WIAT-III Word Reading Standard Score
Evan	16.10	M	Hispanic	1	LD, ADHD	Spanish	96
Andy	15.10	M	White	2	LD, ADHD	English	85
Joe	17.04	M	White	7	LD	English	90
Mary	17.00	F	Hispanic	8	LD	Spanish	97
Nora	15.02	F	Hispanic	1	LD	Spanish	80
Katie	16.04	F	White	2	LD	English	81
Ned	16.07	M	White	7	LD, CAPD	English	90
Sally	17.06	F	White	8	LD	English	96

\* Age in the format of Years: Months

\*\* LD-Learning Disability, ADHD-Attention Deficit Hyperactivity Disorder, CAPD-Central Auditory Processing Disorder

### **Interventionist Participant Selection Process.**

The researcher and the three special education teachers assigned to the four resource room classes were the interventionists for this study. Three teachers assigned to these classes were; Period 1: Mrs. T, Period 2 & 7: Mrs. B, Period 8: Ms. R. All these special educators had, at minimum, 5+ years of teaching experience in a special education capacity at either middle or high school grade levels. The researcher met with the teachers to discuss the procedures, their role as an interventionist, and assess their interest and willingness to participate in this research. All three teachers were eager to participate and were extremely interested in the study's outcome.

### **Independent Variable**

The independent variable in this research study was the *Vocabulary.com* application installed on the student's school-issued Chromebook. During the baseline phase, the student completed three pretest quizzes on ten novel words, at the start of each instructional week; two quizzes on Monday, (one at the beginning of class, one at the end), and one quiz on Tuesday (at the start of class). During the intervention phase, the student was given 15 minutes of class time on Tuesday, Wednesday, and Thursday to use the "practice" features within the *Vocabulary.com* app; this gave students the opportunity to work with each word, helping them visualize and comprehend the meaning of new words, while engaging with them multiple times, in a variety of multi-media contexts. The students were required to complete two full practice rounds on *Vocabulary.com*, thus using the ten vocabulary words twice during each practice session. A return to the baseline occurred on Fridays when the student completed a posttest quiz on ten words they worked with that instructional week.

## Materials

### **Application Selection.**

It is critical teachers evaluate educational apps prior to using them so that they chose the most effective instructional support for their students. Lubniewski, McAuthur, and Harriott (2017) created a research-based checklist that supports teachers in this process. This checklist, App Checklist for Educators (ACE) assists educators in evaluating apps for use in today's classrooms.

Table 2.

*App Checklist for Educators (ACE)*

Name of app:				
Suitable for ages:		Cost:		
<b>Content Area(s)</b> Select all that apply. <input type="checkbox"/> Reading <input type="checkbox"/> Writing <input type="checkbox"/> Science <input type="checkbox"/> Social Studies/ History <input type="checkbox"/> Mathematics <input type="checkbox"/> Other, please specify:		<b>Other Target Skill(s)</b> Select all that apply. <input type="checkbox"/> Behavior <input type="checkbox"/> Study Skills <input type="checkbox"/> Social Skills <input type="checkbox"/> Daily Living Skills <input type="checkbox"/> Communication <input type="checkbox"/> Other, please specify:		
<b>DIRECTIONS: Please choose the answer that best suits each question.</b>				
<b>STUDENT INTEREST</b>				
	YES	NO	SOMEWHAT	N/A
Is it easy to use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Would students find this app entertaining?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does it increase student interest in the topic?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do students want or ask to use this app again?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>DESIGN FEATURES</b>				
	YES	NO	SOMEWHAT	N/A
Is the layout clear and consistent?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the app include graphics and/or animations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the visual features enhance student learning? (e.g. pictures or animation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the auditory features enhance student learning? (e.g. music or reading aloud)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is it compatible with other technology devices?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is technology support available?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is content prepared in a culturally inclusive manner?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does it provide students performance feedback?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does educators have access to student performance data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does it collect data over multiple uses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is it reasonably priced?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>CONNECTION TO CURRICULUM</b>				
	YES	NO	SOMEWHAT	N/A
Does the content relate to Common Core standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can the content match with student skill level?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can it align with IEP goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can it be applied to real world situations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Will it improve students' academic skills?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Will it improve students' critical thinking skills?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>INSTRUCTION FEATURES</b>				
	YES	NO	SOMEWHAT	N/A
Does it require students to memorize basic facts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does it require students to explain ideas and/or concepts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does it require students to apply information to various situations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does it require students to make connections among concepts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does it require students to create original work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>RATING AND REVIEW</b>				
Total number of "YES" responses: _____				
Please circle the rating below.				
23 and above = 5 stars	20-22 = 4 stars	18-19 = 3 stars	15-17 = 2 stars	14 and below = 1 star
	YES		NO	
Would you recommend this app to other professionals?	<input type="checkbox"/>		<input type="checkbox"/>	
Would you recommend this app to families?	<input type="checkbox"/>		<input type="checkbox"/>	
Additional Comments:				

(Lubniewski, McAuthur & Harriott, 2017)

After using ACE to evaluate several educational apps for vocabulary enrichment, the researcher selected *Vocabulary.com* for utilization within this study. Abrams and Walsh (2014) similarly chose *Vocabulary.com* for their research investigating how to support

adolescents acquisition of academic language. *Vocabulary.com* is a software created by Thinkmap Inc., a leader in the Educational application arena. Using the latest research regarding the science of learning, *Vocabulary.com* was designed to provide the fastest and most efficient way to master new vocabulary words. This software offers a variety of questions and contexts for each target word as well as spaced repetition, which enables students to be re-exposed, multiple times, to information about a word and its meaning (Zimmer, 2014). In a brief regarding the creation of this application, Zimmer stated:


We recognize that teachers have limited classroom time to devote to improving student comprehension and literacy across all disciplines. Research has shown that differences in students' vocabulary levels correlate strongly with their academic achievement (Baumann, & Kameenui, 991), and for this reason, *Vocabulary.com* can serve as a vital tool in an educator's arsenal for improving achievement levels for all students (p. 4-5).

### **Student Access to Application.**

Each student used their school-issued Chromebook during this study. Three additional Chromebooks were located, charged, and stored in the resource room classroom, for the duration of the study, to ensure that all students had access to the *Vocabulary.com* app throughout the data collection process. During a training session, the students were guided through the following steps to create a "shortcut" icon on their Chromebook menus:

Table 3.


*Procedures for App Access*

1.	<p>OPEN and powerup your Chromebook.</p> <p>Click onto the internet using CHROME.</p>
2.	<p>On the http:// line type the following link:</p> <p><a href="http://vocab.com/join/33V98FZ">http://vocab.com/join/33V98FZ</a></p> <p>Then press ENTER.</p>
3.	<p>SELECT Join this class.</p> <p>ENTER the information requested to complete your enrollment.</p>
4.	<p>At the top right of you screen CLICK on the three dots in a column.</p> <p>SELECT “more tools” option.</p> <p>SELECT “create a shortcut” option.</p> <p>SELECT “create” option.</p>
5	<p>You should now see a green box with a white check on your desktop.</p> 
6.	<p>Closeout of <i>Vocabulary.com</i></p>

Students were then guided through the following steps to ensure the “shortcut” they created on their Chromebook menus worked correctly:

Table 4.

*Procedures to Confirm App Access.*

1.	CHECK the desktop on your Chromebook. You should HAVE this new ICON on your desktop.  
2.	CLICK on the ICON to test it. You should be directed straight to our class on <i>Vocabulary.com</i> .
3.	You will be using this ICON each day to enter <i>Vocabulary.com</i> and complete practice and quiz assignments!

**Vocabulary Target Word Selection.**

The researcher reviewed several online sources providing lists of vocabulary words that all high school students should know and understand. Four were selected and emailed to the three special education teachers for their input and review. During a meeting, the three special education teachers decided to use “262 SAT Vocab Words You Must Know” from PrepScholar, retrieved from: <https://blog.prepscholar.com/sat-vocabulary-words> as the source for selecting the 10 words a week required to create a weekly target word list within *Vocabulary.com* (see Appendix E). As the study’s

participants were 11<sup>th</sup> and 12<sup>th</sup>-grade students, these target words were deemed most important for their age and stage. In order to remove any potential threat to internal validity with regards to the unequal difficulty of words selected, the researcher copied the 262 alphabetized word list and pasted it into an online randomizing software (see Appendix F). Ten new vocabulary words, from this randomized list, were used each week, for the duration of the study, to create a weekly target word list within *Vocabulary.com*.

### **Word List and Assignments Creation.**

A tutorial video provided by *Vocabulary.com* was used to outline the process of creating word lists <https://www.vocabulary.com/help/videos/>. Every Friday, the researcher completed these steps in *Vocabulary.com* to generate a list of ten new target words for the next instructional week. These lists were labeled “Target Words Week #” and assigned a number that corresponded with the data collection week. She then created quiz and practice assignments for the week ahead in *Vocabulary.com* using the new word list. A tutorial video provided by *Vocabulary.com* was used to outline the steps on how to create quiz and practice assignments within the app <https://www.vocabulary.com/help/videos/>.

### **Dependent Variable**

Student acquisition of vocabulary words is the primary dependent variable in this study. Acquisition was measured through posttest vocabulary assessments, completed in *Vocabulary.com* at the end of each instructional week. Operationalizing vocabulary acquisition for this research study required the researcher to repeatedly replicate and



measure valid and consistent vocabulary assessments throughout this research.

Technology provided a stable environment for this replication and consistency. A weekly posttest quiz, in the format pictured below, was completed within *Vocabulary.com* and utilized for this purpose.

Figure 1.

*Vocabulary.com Sample Quiz Question*



Experimental control of the dependent variable was established at three points within this study; during the “pretest” procedures followed in the baseline phase, in the intervention phase, when the students were able to practice multiple times with the weekly target words within the *Vocabulary.com* app, and lastly when students returned to baseline procedures and completed a posttest quiz.

All data collected during this study was scanned into an electronic format and stored in an electronic folder, which was secured using password encryption and thumb scanning, to guarantee data confidentiality. Once scanned, all primary documents were placed in a file then secured in a password locked safe box located in the researcher’s office. All non-essential materials created during this study were discarded, the same day, using a shredder.

## Procedures

### Interventionist Training

Interventionist training was conducted during a 60-minute meeting in a special education resource room. During this training period, Interventionists were introduced to *Vocabulary.com* through training videos found within the app. The researcher reviewed the Daily Research Procedures checklists for each day (Monday through Friday) then discussed the permitted interactions with student participants during baseline, intervention, and maintenance phases. Interventionist training was completed during after-school hours. The training concluded once the three interventionists demonstrated with 100% criterion, their understanding of *Vocabulary.com*, and the research procedure steps.

### Student Participants Training

Student participant training was conducted during a 45-minute support class in a special education resource room. During this training period, a PowerPoint presentation, with video links on how to navigate the practice and quiz features within *Vocabulary.com*, was used (see Appendix C). The same PowerPoint presentation was utilized for training with students in all four periods. Student training consistently took place on the Friday before the student's entry into the data collection. Students were moved, one period at a time, one week at a time, into the data collection process. During every baseline, intervention, or maintenance session, students signed onto *Vocabulary.com* on their Chromebook and worked independently while an interventionist monitored their work. A Daily Research Procedures handout (see Appendix D) was

created by the researcher and given to the students at the start of each class. This handout was used to guide students through the completion of each task each day. Students were required to use this checklist; to check-off the “Completed Student Check” box for each task upon its completion. The interventionist interacted with the student as needed; having been trained on the app, the amount and degree of scaffolding that could be provided, and the manner with which to refocus the student. The interventionist was required to monitor the students’ progress by checking off the “Observed Fidelity Check” box, on the student’s handout, once they were observed as having completed the task. The interventionists were asked to take notes regarding the frequency of refocusing and the level of scaffolding required for each participant.

### **Fidelity of Instruction**

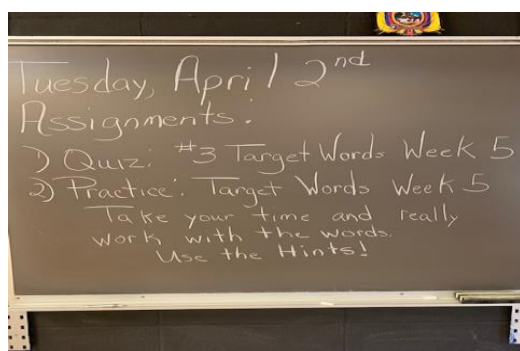
To ensure fidelity of instruction throughout all training sessions, a Daily Research Procedures handout (see Appendix C), based on a task analysis of the core components of the intervention, was used by students and interventionists. Videos, retrieved from *Vocabulary.com* were used for training on how to complete assignments within the app. A special education teacher observed all training sessions. To ensure internal and external reliability, the teacher checked off each item, upon its completion, using a printout of the PowerPoint orientation presentation. Reliability scoring the fidelity checklist was established at 95%. A daily attendance list was completed by the special education teacher throughout the study to document student participant’s attendance for each session.

## Baseline Phase Procedures

The baseline phase began when student participants were able to successfully demonstrate their knowledge and understanding of how to use the Daily Research Procedures handout. Special education resource room support classes were held daily, Monday-Friday, for 45 minutes a day. Students in resource room Period 1 were the first to enter the study while students in Periods 2, 7 & 8 maintained their typical resource room support class. Baseline procedures were followed on Mondays, Tuesdays (3 pretests) and Fridays (1 posttest) when students were required to complete a quiz using *Vocabulary.com*. During baseline, upon entering the classroom, students were given the Daily Research Procedures handout for that day, instructed to power-up their Chromebooks, and sign in to *Vocabulary.com*. Once in the software, they were given an alert listing the day's assignment(s). Daily instructional notes were written on the chalkboard, an example pictured below.

Figure 2.

*Daily Chalkboard Instructions, Tuesday, 4/2*



Students were instructed to complete the assignment while checking off each, upon its completion, in the Completed Student Check” box on their Daily Research Procedures

handout. On Monday, at the start of class, students were instructed to complete Quiz #1 (Baseline #1). Once completed, the student was directed to write the score they achieved on their handout and raised their hand. An interventionist, now standing beside the student, verified the score on the student's computer screen matched the score the student had written on their daily handout. During all sessions, the interventionist walked around and observed the student's work. She checked off the Observed Fidelity box, on the student's handout, once she saw each step's completion. Before the end of class on Monday, 15 minutes before the final bell rang, students were instructed to complete Quiz #2 (Baseline #2) and repeated the steps listed above. On Tuesday, at the start of class, the students were instructed to complete Quiz #3 (Baseline #3) and repeated the steps listed above. On Friday, at the start of class, these same students were instructed to complete Quiz #4 (Posttest) and again completed the steps listed above.

In baseline, the detailed steps students followed each day, according to the Daily Research Procedures handout, were as follows:

Table 5.

*Daily Research Procedures – Baseline Session*

1.	OPEN and powerup your Chromebook
2.	CLICK on the <i>Vocabulary.com</i> icon (shortcut) located on your desktop.  You will be directed to our class on <i>Vocabulary.com</i>
3.	Under the CLASS ASSIGNMENTS, Look for CURRENT  ASSIGNMENTS then SELECT the Quiz assignment entitled  TARGET WORDS WEEK ____.

4.	CLICK on Start the Quiz.
5.	CLICK on the dot you feel contains the best response for ALL ten questions.  Answer all ten questions in one sitting. Do NOT open any other application on your Chromebook while completing the quiz.
6.	<i>Vocabulary.com</i> will alert you once you have answered ALL TEN questions.  STOP! Write down the number of correct answers found under the score column. _____/10 RAISE YOUR HAND to have the researcher or your teacher validate your entry.
7.	You have successfully completed the assignment!
8.	Sign out of <i>Vocabulary.com</i> ,  CLICK on your name at the top right of the screen; this will take you to your account menu.
9.	CLICK on Log Out

Upon conclusion each instructional day, the researcher compared the quiz scores written on each student's Daily Research Procedures handout with the scores found in *Vocabulary.com*. Once scores were confirmed the three baseline and one posttest scores were plotted as data points on a graph created by the researcher using Excel software. A minimum of three pretest data points were collected for each participant while in this phase of the study to allow for data analysis. Once the requirements stated above were met, students were moved into the intervention phase. Experimental control was

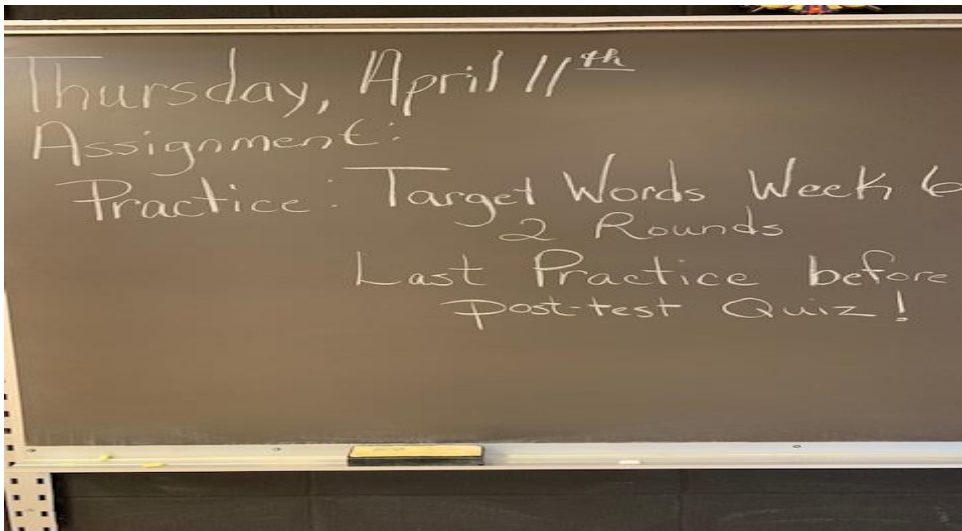
established when three indications of effect, across all participants, had clearly been established.

### **Intervention Phase Procedures**

The Intervention phase began when students in resource room Period 1 had completed the three baseline pretests. Intervention procedures were completed on Tuesdays, Wednesdays, and Thursdays when students were required to practice with the ten weekly target words by completing two practice sessions each day using *Vocabulary.com*. During the intervention, upon entering the classroom, students were given the Daily Research Procedures handout and instructed to power-up their Chromebooks and sign in to *Vocabulary.com*. Once in the software, they were given an alert listing the day's assignment(s). Daily instructional notes were also written on the chalkboard, an example pictured below.

Figure 3.

*Daily Chalkboard Instructions, Thursday, 4/11*



Students were instructed to complete the assignment while checking of each of the items listed items on Tuesday, Wednesday, and Thursday's Daily Research Procedures handout. On Tuesday, after completing Quiz #3, students were instructed to work with the 10 Target Vocabulary words using the practice assignment in *Vocabulary.com*. They were required to complete two practice rounds, each day, noting the score they achieved for each on their handout then raised their hand. An interventionist, now standing beside the student, verified the score on the student's computer screen matched the score the student had written on their daily handout. During all sessions, the interventionist walked around and observed the student's work. She checked off the Observed Fidelity box, on the student's handout, once she observed each step's completion. On Wednesday and Thursday, at the start of class, these same students were instructed to work with the 10 Target Vocabulary works using the practice assignment in *Vocabulary.com*. They were required to complete two practice rounds, giving them multiple opportunities to visualize and comprehend the meaning of new words while engaging with them numerous times in a variety of multi-media contexts. Students wrote the score they achieved for each practice session on their handout. The students and interventionist again completed the steps listed above.

In intervention, the detailed steps students followed each day, according to the Daily Research Procedures handout, were as follows:



Table 6.

*Daily Research Procedures – Intervention Sessions*

1.	OPEN and powerup your Chromebook.
2.	CLICK on the Vocabulary.com icon (shortcut) located on your desktop.  You will be directed to our class on Vocabulary.com
3.	Under the CLASS ASSIGNMENTS, Look for CURRENT ASSIGNMENTS  then SELECT the PRACTICE assignment entitled TARGET WORDS WEEK  _____.
4.	CLICK on Start the Practice.
5.	CLICK on the dot you feel contains the best response for ALL ten questions.  Answer all the items in one sitting. Do NOT open any other application on your Chromebook while practicing.  WHEN ANSWERING you can:  Click on SPOKEN AUDIO if you want to hear the questions read to you (using headphones as not to disturb your fellow classmates)  Click on TAKE HINT if you are not sure of a response. You will then be given three choices:  50/50 (takes away two choices)  word in the wild (uses the word in a sentence)  definition (will be given the definition of the word)

6.	Once you have selected a response to each question, READ the “blurbs” that appear to the right of the question. They contain a further explanation of the word and provide engaging examples of how it is used. To see your progress LOOK at the lower right of the screen. It lists the round you are on and the number of words you have practiced with.
7.	<i>Vocabulary.com</i> will alert you once you have answered ALL practice questions. STOP Write down the number of correct progress questions found under the Points earned for this round column _____/10 ROUND 1. RAISE YOUR HAND to have the researcher or your teacher validate your entry.
8.	You have successfully completed this Practice Round! CLICK on the > to complete a second practice round with these words.
9.	<i>Vocabulary.com</i> will alert you once you have answered ALL practice questions. STOP Write down the number of correct progress questions found under the Points earned for this round column _____/10 ROUND 2. RAISE YOUR HAND to have the researcher or your teacher validate your entry.
10.	You have successfully completed TWO Practice Rounds! Sign out of <i>Vocabulary.com</i> , CLICK on your name at the top right of the screen.; this will take you to your account menu.
11.	CLICK on Log Out

Upon conclusion each instructional day, the researcher compared the practice scores written on each student's Daily Research Procedures handout with the scores found in *Vocabulary.com*. Once scores were confirmed, the three intervention scores were plotted as data points on a graph created by the researcher using Excel software. A minimum of three scores were collected for each participant, while in the intervention phase, to provide at least three opportunities to allow for data analysis. Experimental control was established when three indications of effect, across all participants, had clearly been established.

In alignment with the researcher's selected methodology, students in Resource Room: Period 1 were the first to enter the study while students in Periods 2, 7 & 8 maintained their typical resource room support class. Resource Room: Period 1 remained in baseline and intervention data collection when Resource Room: Period 2 entered the study during the next instructional week. Resource Room: Periods 7 & 8 maintained their typical resource room support class. This cycle continued throughout the study as each new Period entered the data collections process. During week four, all Resource Room Periods had entered the study and were in the data collection process. Data collection continued for three more weeks, once all groups were in, to ensure a minimum of three instructional week's data was collected for students in each Period.

### **Maintenance Phase Procedures**

Three weeks from the conclusion of the baseline and intervention phases, the researcher returned to the research site and collected data. Using the steps outlined above, the researcher created a new target word list in *Vocabulary.com* containing the last ten words used during baseline and intervention phases. She then, using the steps outlined

above, created a quiz assignment in *Vocabulary.com*. Meeting with each period, one week at a time, the students completed the quiz following the steps outlined above. Upon conclusion of each maintenance session, the researcher compared the quiz scores written on each student's Daily Research Procedures handout with the scores found in *Vocabulary.com*. Once scores were confirmed, they were plotted as a data point on the graph created by the researcher using Excel software. During this phase, the researcher was interested in seeing to what extent student participants maintained the vocabulary knowledge they acquired while participating in this research.

### **Data Analysis**

Kennedy (2005) states "the use of graphic displays to visualize quantitative information is central to [the single-subject design] process" (p. 191). A multiple baseline design graph should illustrate all data points collected during each phase of this study. Effects within all treatment phases must be clearly indicated. The number of correct responses on each vocabulary assignment was shown on the y-axis. The number of sessions was shown on the x-axis. Visual inspection was used to analyze changes in trend, level, and variability. The transfers from baseline to intervention to maintenance, for each student participant, is clearly labeled. When moving participants into a new phase of this study, experimental control was established by taking data points from each participant within each period.

Quantitative data was collected, via a weekly survey, to address whether students enjoyed using *Vocabulary.com* as an independent learning strategy, and would they continue to use this application when attempting to learn new vocabulary words. This

qualitative data was categorized and used to provide insights into the students' acceptability of and satisfaction with intervention procedures.

### **Social Validity**

Social validity is addressed when participants continue the use of *Vocabulary.com* to support vocabulary development over time, investigating the degree to which the effects of using an app to support vocabulary acquisition are sustained over time. Social validity was addressed within the maintenance phase of this study, which investigated the degree to which the effects of using an app to support vocabulary acquisition is sustained over time. Maintenance data points indicated that the intervention had been sustained over time; therefore, the intervention has some qualities that are consistent with what is meant by social validity (Kennedy, 2005). Qualitative data was also collected during this study in a survey completed by student participants at the conclusion of each week (see Appendix A). This data was used to address the research question of whether students like using *Vocabulary.com* as an independent learning strategy and would they continue to use this application when attempting to learn new vocabulary words yet speaks directly to the study's social validity. The survey contained two open-ended questions and one yes/no question; did you like working on *Vocabulary.com* this week, Why or why not, do you think working on *Vocabulary.com* helped you understand and learn this week's ten new vocabulary words, Why or why not? And would you use the *Vocabulary.com* app on your own to learn vocabulary words, yes or no?

## **Fidelity of Implementation**

To ensure fidelity of implementation throughout all baseline, intervention and maintenance phases, a Daily Research Procedures handout (see Appendix C), based on a task analysis of the core components of the intervention, was created by the researcher and used by students and interventionists. To examine inter-observer agreement (IOA) of the dependent variable, student scores, interventionists observational checkmarks, and the data reporting features within *Vocabulary.com* were used to compare scores for 75% of all intervention lessons observed in the resource room classroom. The comparison of these three data sources produced a 100% score with regards to the fidelity of implementation. To ensure IOA of the fidelity of implementation, interventionists observational checkmarks for 75% of all lessons observed throughout all phases of this study, produced a 100% score with regards to accuracy of execution. A daily attendance list was completed by the special education teacher throughout the study to document student participant's attendance for each session.

## CHAPTER FOUR

### Research Findings

This research study investigated the effects of a laptop-based intervention on the vocabulary knowledge of 11<sup>th</sup> and 12<sup>th</sup>-grade students with exceptionalities. A single-subject, non-concurrent, multiple baseline design was used to collect data, through baseline, intervention, and maintenance phases to examine the effects of using an application, *Vocabulary.com*, on student's school-issued Chromebook laptop. Pretest and posttest data were also used to explore these effects. Data was collected over a 10-week instructional period, staggered across four resource room periods. Three weeks after all students had concluded baseline and intervention, maintenance data was collected over a four-week instructional period, again staggered across four resource room periods.

Single case design relies on the use of visual analysis to show the relationship between the baseline and intervention conditions. It allows the researcher to recognize the effect of an independent variable on behavior over a period of time, with each data point identifying level, trend, and variability within, across, and between conditions (Gage & Lewis, 2013). The visual analysis included assessing whether an effect was present, as well as comparing fluctuations in level, trend, and variability of data within each phase, examining data patterns across phases taking into account the immediacy of the effect, overlap, and consistency of data in comparable phases (Ledford, Lane, & Severini, 2018).

Figure 4.: Group A: Baseline, Intervention and Maintenance Graph

The graph below illustrates the data collected in the baseline, intervention, and maintenance phases from Group A: Evan- Period 1, Andy- Period 2, Joe-Period 7, and Mary-Period 7.

*Baseline, Intervention, and Maintenance for Group A*

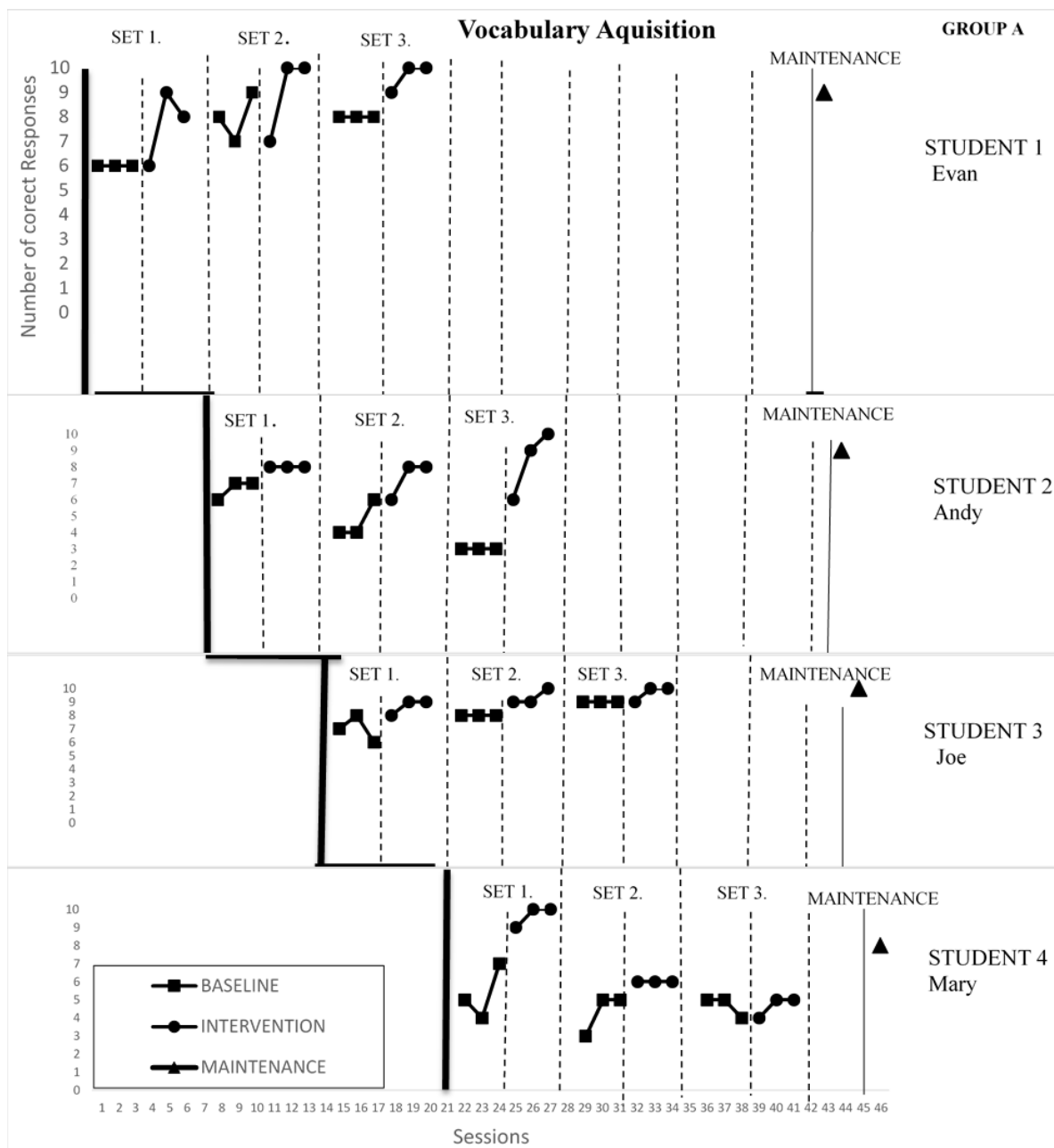
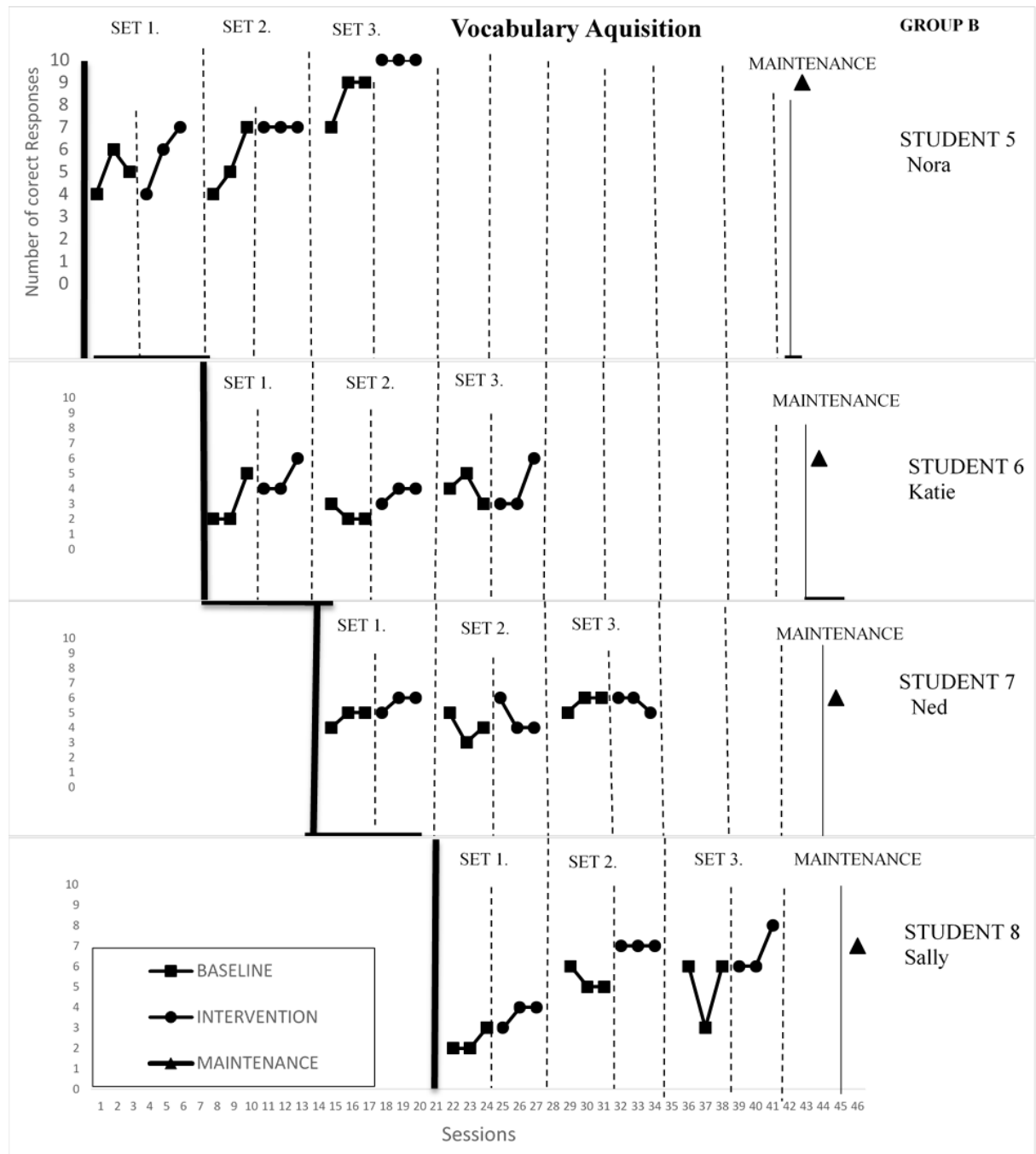




Figure 5.: Group B: Baseline, Intervention and Maintenance Graph

The graph below illustrates the data collected in baseline, intervention, and maintenance phases from Group B: Nora- Period 1, Katie- Period 2, Ned-Period 7, and Sally-Period 7.

*Baseline, Intervention, and Maintenance for Group B*



Detailed analysis of the data illustrated in Figure 4. is discussed below, specific to each student participant:

### **Group A (Baseline, Intervention, Maintenance)**

**Group A: Evan:** Evan was a 16-yr. Hispanic male, who presented himself as an extremely confident, well-adjusted 12<sup>th</sup> grader. Evan was classified with LD and ADHD, which had been detected through an in-school assessment. Evan, like many other students in this study, was on-track to graduate at the end of the school year. The data in Figure 4. illustrates Evan had a stable baseline consisting of 60% accuracy over three consecutive sessions. At the start of intervention for Set 1, data showed a continuation of 60% accuracy like in baseline. Remaining two intervention sessions showed an increasing trend, ranging from 80% to 90% when Evan met criteria at this session. Data for Set 2. showed, Evan began baseline at 80% accuracy, then dropped to 60%, ending at 90% accuracy. Set 2. invention data showed 70% accuracy then increased to 100% for the next two consecutive sessions. Data for Set 3. showed Evan had a stable baseline consisting of 80% accuracy. Intervention data showed 80% accuracy then increased to 100% for the next two consecutive sessions. Post-intervention probe, three weeks after intervention, showed 90% accuracy maintaining criteria from intervention.

**Group A: Andy:** Andy was a 15-yr. White male, who presented himself as an extremely confident, well-adjusted 11<sup>th</sup> grader, whose baseball hat, on-backward, continuously got him unwanted attention. He was classified with LD and ADHD, and according to his accommodations, he required the use of verbal and nonverbal prompts to refocus when he appeared to be off task, distracted, or not engaged. The data in Figure 4. illustrates Andy had a slight increase in Set 1. baseline from 60% to 70% accuracy across

three consecutive sessions. Set 1. intervention data showed a stable trend of 80% accuracy to meet criteria after three sessions of intervention. Data for Set 2. showed 40-60% accuracy during baseline. During Set 2. intervention, Andy remained at 60% then increased to 80% accuracy over the next two consecutive sessions. Set 3. data showed 30% accuracy across three consecutive baseline sessions. In Set 3. intervention, his data showed a measured increase from 60-100% accuracy. Post-intervention data collected three weeks following interventions showed results of maintaining at 90% accuracy of maintaining intervention skills acquired.

**Group A: Joe:** Joe was a 17-yr. Hispanic male, who presented himself as an extremely confident, well-adjusted 12<sup>th</sup> grader. Joe had an engaging personality and used a purple crayon to complete his Daily Research Procedures chart. He was a pleasure to work with, and upon conclusion of this study, the researcher gave him the book *Harold and the Purple Crayon* as that became their inside joke. Joe was classified with LD, according to his accommodations, he received extended time on assessments and was required to sit in the front of the classroom. Joe was on-track to graduate at the end of the school year. The data in Figure 4. demonstrates Joe's Set 1. baseline consisted of 60 - 80% accuracy over three consecutive sessions. At the start of Set 1. intervention, data showed a continuation of 80% accuracy like in baseline. Remaining two intervention sessions showed a steady increase to 90% accuracy. Intervention data showed a stable trend to meet criteria after three sessions of intervention. At Set 2., data illustrates Joe had three consecutive stable baseline sessions at 80%. At the start of Set 2. intervention, data increased to 90% to 100% accuracy for three consecutive sessions. Set 3. data illustrates two consecutive stable baseline sessions at 90%. At the start of Set 3. intervention, data

remained steady 90% then increase to 100% accuracy for the next two consecutive sessions. Post-intervention data, collected three weeks after intervention sessions, shows Joe maintaining at 90% accuracy of maintaining intervention skills acquired.

**Group A: Mary:** Mary was a 17-yr. Hispanic female, who presented herself as an extremely confident, well-adjusted 12<sup>th</sup> grader. Mary was a hard-working student who, according to her accommodations, learned best by doing something hands-on and by seeing and hearing information together. Mary was classified with LD and received extra time on assessments. Her reading skills fell within the average level, yet she often needed to reread the text to grasp the meaning. The data in Figure 4. illustrates Mary presented with a slight increase in Set 1. baseline, ranging from 50% to 70% across three consecutive sessions. Set 1 intervention data showed a stable, increasing trend ranging from 90% to 100% across three consecutive sessions. Intervention data showed a stable trend to meet criteria after three sessions of intervention. Set 2. data illustrates Mary showed 30% accuracy during initial baseline then increased slightly to 40% during the next two consecutive baseline sessions. At the start of Set 2. intervention, data increased to 60% and remained steady for three consecutive sessions. Set 3. data illustrates Mary had two consecutive stable baseline sessions at 50% accuracy, then dropped to 40% in her final baseline session. At the start of Set 3. intervention, Mary remained at 40% accuracy then increased to 50% accuracy during the next two consecutive sessions. Post-intervention data, collected three weeks after intervention sessions, showed Mary maintaining at 80% accuracy of maintaining intervention skills acquired.

Detailed analysis of the data illustrated in Figure 5. is discussed below, specific to each student participant:

### **Group B (Baseline, Intervention, Maintenance)**

**Group B: Nora:** Nora was a 15-yr. White female, who presented herself as an extremely confident, well-adjusted 11<sup>th</sup> grader. Nora remained extremely quiet during the first few weeks of this study. She was classified with LD and according to her accommodations required extra time with assessments and assistance with completing schoolwork in a timely manner. The data in Figure 5. illustrates Nora had a variable increase in Set 1. baseline from 40% to 60% across three baseline probes. At the start of Set 1. intervention, data showed a continuation of 40% accuracy like in baseline. Remaining two intervention sessions show an increasingly stable trend ranging from 60% to 70%. Intervention data show a stable trend to meet criteria after three sessions of intervention. Data from Set 2. showed an upwards trend in from 40-70% accuracy in baseline. At Set 2. invention, Nora maintained 70% accuracy across three consecutive sessions. Set 3. data showed an upward trend from 70 - 90% accuracy in baseline. At Set 3. invention, she maintained 100% accuracy across three consecutive sessions. Post-intervention probe, three weeks after intervention, showed 80% accuracy maintaining criteria from intervention.

**Group B: Katie:** Katie was a 16-yr. White female, who presented herself as an extremely confident, well-adjusted 11<sup>th</sup> grader. Katie remained shy during the first few weeks, yet eventually opened up when she became comfortable with the researcher. She was classified with LD, and according to her accommodations, received extended time on assessments and needed to develop self-advocacy skills. Katie's scores on the WIAT iii

word reading assessment indicated her reading level was slightly below average, and she appeared easily distracted in the classroom setting. The data in Figure 5. illustrates Katie had an increase in Set 1. baseline from 20 - 50% accuracy across three consecutive sessions. Set 1. intervention data showed a stable trend of 40% accuracy, across the first two sessions, then an increase to 60% to meet criteria after three sessions of intervention. Data from Set 2. showed 20-30% accuracy during baseline. During Set 2. intervention, Katie remained at 30% then increased to 40% accuracy over the next two consecutive sessions. Katie met criteria at the second intervention session. Data from Set 3. showed 30-50% accuracy during baseline sessions. In Set 3. intervention, she remained at 30% accuracy then increased to 60% for the last session. Post-intervention probe, three weeks after intervention, showed 60% accuracy maintaining criteria from intervention.

**Group B: Ned:** Ned was a 16-yr. White male, who presented himself as an extremely confident, well-adjusted 12<sup>th</sup> grader. Ned entered the classroom each day, eager to complete his assignments within *Vocabulary.com*. Ned was classified with LD and a Central Auditory Processing Disorder which adversely affected appropriate participation in academic activities. According to his accommodations, he required the use of verbal and nonverbal prompts to refocus when he appeared to be off task, distracted, or not engaged. The data in Figure 5. demonstrates Ned's Set 1. baseline consisted of 40 – 50% accuracy over three consecutive sessions. At the start of Set 1. intervention, data showed a continuation of 50% accuracy like in baseline. Remaining two intervention sessions showed a steady increase to 60% accuracy. Intervention data showed a stable trend to meet criteria after three sessions of intervention. Set 2. data

illustrates Ned had a range of 30-50% accuracy in baseline sessions. At the start of Set 2. intervention, data increased to 60% then decreased to 40% for the next two consecutive sessions. Data from Set 3. illustrates three consecutive stable baseline sessions at 50-60%. At the start of Set 3. intervention, data remained steady 60% then decreased to 40% accuracy for the last session. Post-intervention data collected three weeks following interventions show results maintaining at 60%.

**Group B: Sally:** Sally was a 17-yr. White female, who presented herself as an extremely confident, well-adjusted 12<sup>th</sup> grader. Sally, like many other students in this study, was on-track to graduate at the end of the school year. She was eager to participate in this study, hoping to learn new words to assist with her required writing assignments. Sally was diagnosed with LD, and according to her accommodations, received extended time on assessments and needed to develop self-advocacy skills. The data in Figure 5. illustrates in Set 1. Sally presented a stable baseline at 20% with a slight increase to 30% within three consecutive sessions. At the start of Set 1. intervention, data showed a continuation of 30% accuracy, similar to baseline. Remaining two intervention sessions showed an increasingly stable trend at 40%. Intervention data show a stable trend to meet criteria after three sessions of intervention. Data from Set 2. illustrates Sally showed 60% accuracy during initial baseline then decreased slightly to 50% during the next two consecutive baseline sessions. At the start of Set 2. intervention, data increased to 70% and remained steady for three consecutive sessions. Data from Set 3. data illustrates Sally had two baseline sessions at 60% accuracy, and one at 40% accuracy. At the start of Set 3. intervention, Sally remained at 60% accuracy for two consecutive intervention sessions then jumped to 80% accuracy during the final session. A post-

intervention probe was collected three weeks following intervention. Data presents with 70% accuracy criteria levels maintaining intervention skills acquired.



Figure 6.: Group A: Pretest, Posttest Graph

The graph below illustrates the data collected in the Pretests and Posttest phases for

Group A: Evan- Period 1, Andy- Period 2, Joe-Period 7 and Mary-Period 8

*Pretest/Posttest Data for Group A*

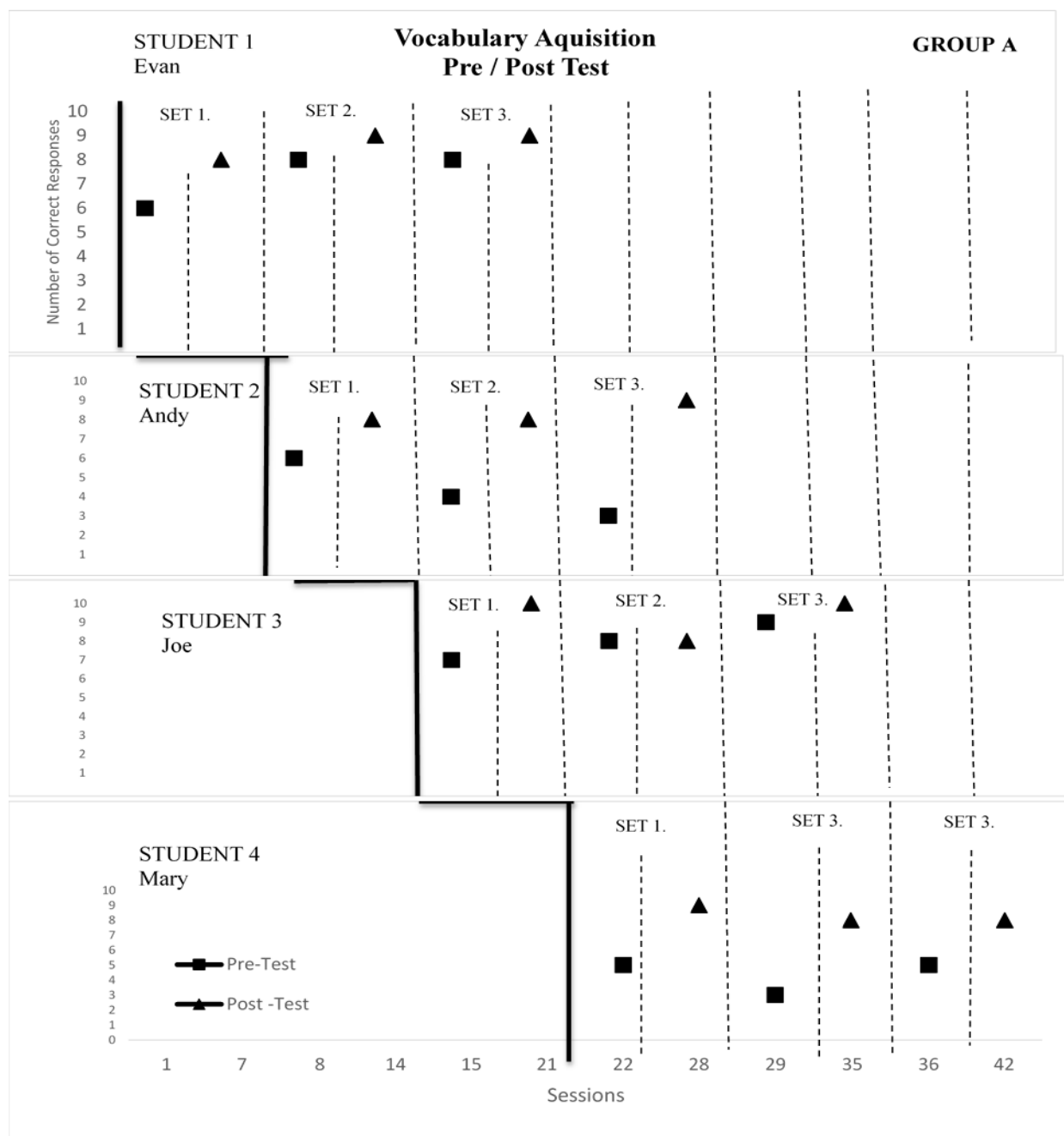
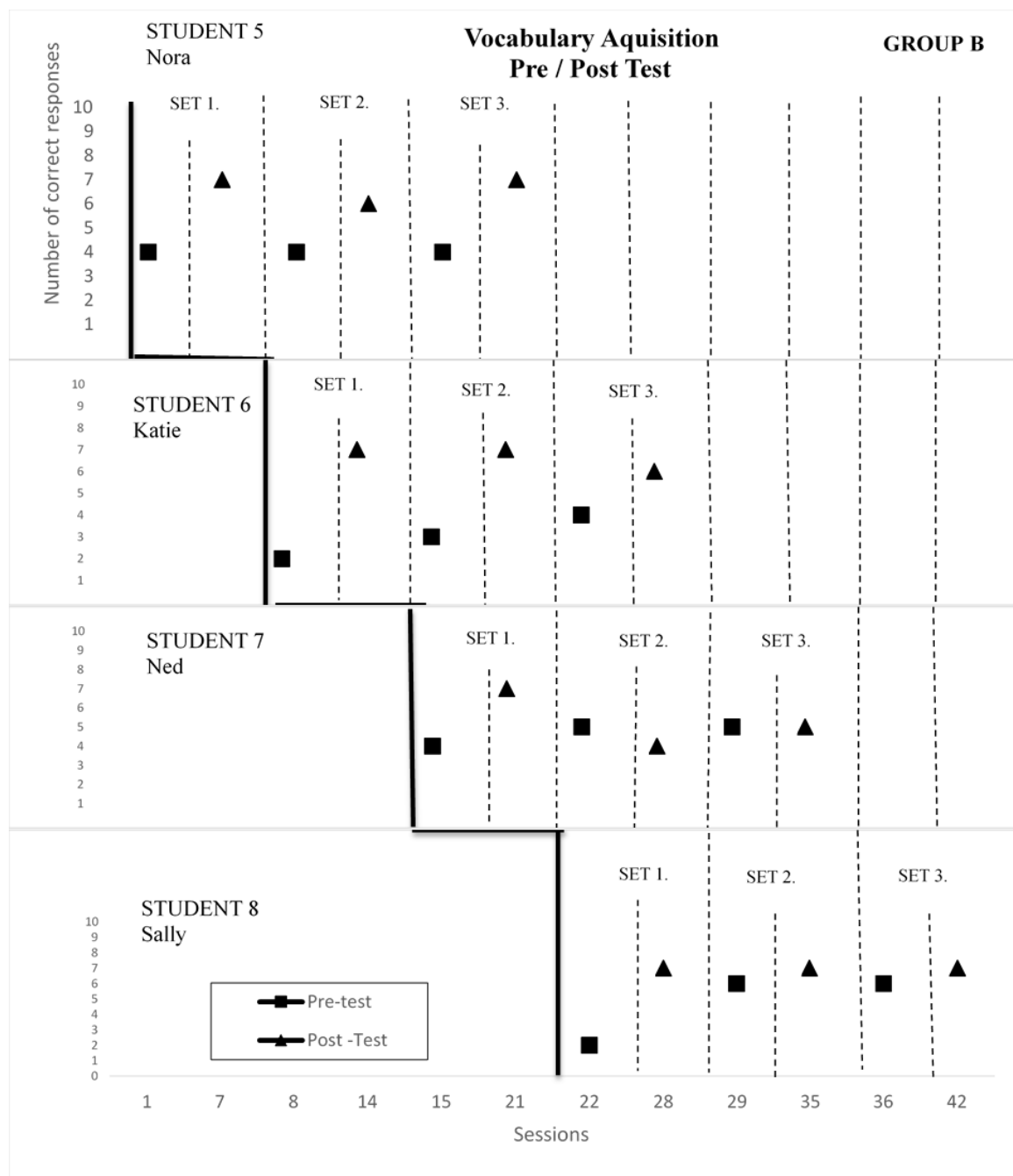


Figure 7.: Group B: Pretest, Posttest Graph

The graph below illustrates the data collected in the Pretests and Posttest phases for Group B: Nora- Period 1, Katie- Period 2, Ned-Period 7, and Sally-Period 8.

Pretest/Posttest Data for Group B



Detailed analysis of the data illustrated in Figure 6. is discussed below, specific to each student participant:

### **Group A (Pretest, Posttest)**

Evan had a Set 1. pretest score of 60% accuracy, with a posttest score that increased to 80% accuracy. At Set 2., he had a pretest score of 80% accuracy, with a posttest score that increased to 90% accuracy. Data from Set 3. indicated Evan had a pretest score of 80% accuracy, with a posttest score that increased to 90% accuracy, thus indicating an average of 14% increase in overall accuracy from pretest to posttest scores.

Andy had a Set 1. pretest score of 60% accuracy, with a posttest score that increased to 80% accuracy. At Set 2., he had a pretest score of 40% accuracy, with a posttest score that increased to 80% accuracy. Data from Set 3. indicated Andy had a pretest score of 30% accuracy, with a posttest score that increased to 90% accuracy, thus indicating an average of 40% increase in overall accuracy from pretest to posttest scores.

Joe, in Set 1., had a pretest score of 60% accuracy, with a posttest score that increased to 100% accuracy. Data from Set 2. indicated he had a pretest score of 80% accuracy, with a posttest score that remained at 80% accuracy. At Set 3. Joe had a pretest score of 90% accuracy, with a posttest score that increased to 100% accuracy, thus indicating an average of 17% increase in overall accuracy from pretest to posttest scores.

Mary had a Set 1. pretest score of 40% accuracy, with a posttest score that increased to 90% accuracy. Data from Set 2. Indicated she had a pretest score of 20% accuracy, with a posttest score that increased to 80% accuracy. At Set 3. Mary had a

pretest score of 50% accuracy, with a posttest score that increased to 80% accuracy, thus indicating an average of 46% increase in overall accuracy from pretest to posttest scores.

Detailed analysis of the data illustrated in Figure 7. is discussed below, specific to each student participant:

### **Group B (Pretest, Posttest)**

Nora, at Set 1, had a pretest score of 40% accuracy, with a posttest score that increased to 70% accuracy. Data from Set 2. indicated she had a pretest score of 40% accuracy, with a posttest score that increased to 60% accuracy. At Step 3. Nora had a pretest score of 20% accuracy, with a posttest score that increased to 60% accuracy, thus indicating an average of 30% increase in overall accuracy from pretest to posttest scores.

Katie had a Set 1. pretest score of 20% accuracy, with a posttest score that increased to 70% accuracy. At Set 2., she had a pretest score of 30% accuracy, with a posttest score that increased to 70% accuracy. Data from Set 3. indicated Katie had a pretest score of 40% accuracy, with a posttest score that increased to 60% accuracy, thus indicating an average of 37% increase in overall accuracy from pretest to posttest scores.

Ned had a Set 1. pretest score of 40% accuracy, with a posttest score that increased to 70% accuracy. At Set 2., he had a pretest score of 50% accuracy, with a posttest score that decreased to 40% accuracy. Data from Set 3. indicated Ned had a pretest score of 50% accuracy, with a posttest score that increased to 70% accuracy, thus indicating an average of 14% increase in overall accuracy from pretest to posttest scores.

Sally, in Set 1., had a pretest score of 20% accuracy, with a posttest score that increased to 70% accuracy. At Set 2., she had a pretest score of 60% accuracy, with a

posttest score that increased to 70% accuracy. Data from Set 3. indicated Sally had a pretest score of 60% accuracy, with a posttest score that increased to 70% accuracy, thus indicating an average of 20% increase in overall accuracy from pretest to posttest scores.

**Research Question #1:** What are the effects of using the vocabulary application *Vocabulary.com*, on a student's school-issued Chromebook, on the vocabulary knowledge of 11<sup>th</sup> and 12<sup>th</sup>-grade students with Learning Disabilities?

The purpose of this research study was to investigate the effects of using a laptop-based intervention on the vocabulary knowledge of 11<sup>th</sup> and 12<sup>th</sup>-grade students with exceptionalities. A single-subject, non-concurrent baseline design was used to collect data that could provide insights to address the research question above.

When considering the summation of data collected using single-subject design, accuracy gains, in the form of vocabulary knowledge, were achieved across all student participants. Group A realized an average of 18% growth in overall accuracy scores from baseline to intervention phases when using the *Vocabulary.com* app, while Group B achieved an overall average of 9% accuracy growth. When summarizing the data obtained from pretest and posttest scores, Group A realized an average gain of 29% growth in overall accuracy scores, while Group B achieved an average of 37% growth in overall accuracy scores. Lastly, when summarizing students' achievements in maintaining the vocabulary knowledge they learned while participating in this study, Group A achieved an overall average of 83% in the maintenance of vocabulary knowledge while Group B achieved 68% in the maintenance of vocabulary knowledge. Simply stated, this investigation supports the assertion that using an app, *Vocabulary.com*, on a student's school-issued Chromebook, has positive and encouraging

effects on the vocabulary acquisition of 11<sup>th</sup> and 12<sup>th</sup>-grade students with learning disabilities.

**Research Questions #2:** Do students like using *Vocabulary.com* as an independent learning strategy, and would they continue to use this application when attempting to learn new vocabulary words?

The purpose of this research study was to investigate the effects of using a laptop-based intervention on the vocabulary knowledge of 11<sup>th</sup> and 12<sup>th</sup>-grade students with exceptionalities. Qualitative data was collected weekly throughout the study to delve deeper into students' thoughts and perceptions while participating in this research process. A survey containing two opened-ended questions, and one yes/no question was used to provide insights to address the research question above.

Table 7.

*Participant Social Validity Data (n=8)*

Question	Yes	Maybe	No
1. Did you like working on <i>Vocabulary.com</i> this week? Why or why not?	6	1	1
2. Do you think working on <i>Vocabulary.com</i> helped you understand and learn this week's ten new vocabulary words, Why or why not?	7		1
3. Would you use the <i>Vocabulary.com</i> app on your own to learn vocabulary words, yes or no?	7	1	

Qualitative data, by its nature, provides a more in-depth understanding that often goes well beyond scores and achievement. As illustrated in Table 7., 60% of students participating in this study liked working on the *Vocabulary.com* app, while 70% felt the

app helped them understand and learn each week's target words. Also, important to note, of the student participating in this study, 70% stated they would use the *Vocabulary.com* app independently when attempting to learn new vocabulary words.

Students, while completing their weekly survey, were asked to write why they liked or didn't like, working on the *Vocabulary.com* app. Some of the responses were "I liked working on vocab.com this week because there were more words that were new to me than last week" (Evan), "Yes, I did because I get to learn new words that will help me on major tests like the SATs" (Nora), and "Yes, I learned a bunch of new words because I didn't know most of them this week" (Andy). When asked why they thought *Vocabulary.com* helped or didn't help them learn the week's target words, they replied, "Yes, because I didn't get one right in practice, I could see what the word's definition is and I could use the hints" (Mary), "Yes because the practices are slow-paced so I can see what I got wrong and why" (Joe), and "Yes, because the way vocab.com teaches you words will most likely help you retain that knowledge in the future" (Sally). When categorizing students written responses, with both negative and positive coding, 85% were deemed positive in support of using this application to learn and understand new vocabulary words.

When considering the summation of the qualitative data collected using a weekly survey, this investigation supports the assertion that students enjoyed using the *Vocabulary.com* app, and would continue to use it, as an independent learning strategy, when attempting to learn new vocabulary words.

## CHAPTER FIVE

### Discussion

Vocabulary knowledge is one of the essential components of literacy achievement. Direct classroom instruction too often, does not provide adequate time for students to remember, understand, apply, analyze, and evaluate new vocabulary words. Direct vocabulary instruction is undoubtedly essential, yet research indicates that a student, with a well-developed vocabulary, learns many more words indirectly through reading than from classroom instruction (Cunningham & Stanovich, 1998; Nagy & Herman, 1984). The purpose of this study was to investigate the effects of using an application, *Vocabulary.com*, on a student's personal computer as independent word-learning strategy, to increase the vocabulary knowledge of 11<sup>th</sup> and 12<sup>th</sup>-grade students with exceptionalities. Bryant, Goodwin, Bryant, and Higgins (2003) suggested that for students with exceptionalities, vocabulary knowledge is not equal to their general education peers due to their lack of independent word-learning strategies. Although there is literature in support of using computer-assisted instruction (CAI), employing podcasts, infused with content-specific instructional practices at individual computer terminals (Kennedy et al., 2014, 2015), and using educational applications, accessed on a student's iPad, to support and enhance literacy instruction (Hutchison et al, 2012,;Sheppard, 2011, :Harmon, 2012, :Retter et al., 2013), there is no current research pairing an educational app, *Vocabulary.com*, with a student's school-issued Chromebook to be utilized as an independent learning strategy, to promote the acquisition of vocabulary knowledge.

In 2019, finding good quality education apps, that enhance research, teaching, and learning can be an intimidating task, mainly when one takes into consideration, there are



over 500,000 educational apps (“Apps for Education,” 2019). Recently published studies completed in the United Arab Emirates and South Africa explored the use of an app to improve the academic vocabulary of students whose primary language was not English (Bowles, 2017, Makoe & Shandu, 2018). These three researchers met with the same conclusion that using a generic app did not lead to a significant increase in a student’s vocabulary size. In both situations, the researchers became part of a team that developed and built a new customized app to address the specific needs of the Emirati and South African students.

Researchers Redd and Schmidt-Crawford (2011) utilized a gaming app called the *Vocab Challenge* to assist students with mastering specific words in a variety of contexts. “Their study examined how a mobile learning device along with a vocabulary app, might establish a rich gaming environment that was conducive to acquiring words most frequently found on the Scholastic Assessment Test (SAT) taken by high-school students” (p.55). The results of this study indicated that a gaming app could provide a vocabulary learning experience by promoting informal learning. In 2014, researchers Abrams and Walsh continued to investigate how apps, containing gamified practices, supported adolescents’ acquisition of academic vocabulary for English Language Learners. Their research indicated the interactivity and extended engagement created by *Vocabulary.com* provided teachers with another way to engross students in learning academic vocabulary. The results of this research, through discussion, data analysis, and visual analysis show that use of the *Vocabulary.com* app may be effective in increasing the vocabulary knowledge of secondary students with exceptionalities.

Twenty-first-century advances in technology are made at such a rapid pace that individuals are often “out of breath” in their efforts to keep up. Just when one becomes comfortable with the newest technological “gadget,” a more improved version arrives on the scene. Technology has, and always will be, many steps ahead of research focusing on the potential benefits of its use within educational settings. Each of the eight participants in this study demonstrated advances in their vocabulary knowledge when using the application *Vocabulary.com*, on their school-issued computer. Group A and B realized, on average, a 15-25% growth in their overall accuracy scores during the duration of this study. It is difficult to predict whether students will continue to use this application when attempting to grow their vocabulary knowledge; one obstacle to this being the issue that the *Vocabulary.com* app required a monetary expenditure. The researcher, for the purpose of this study, purchased an individual teacher’s subscription, allowing her to create, administer, and evaluate work from four groups of students, 17 in all. When initial graphs and data from this study were discussed with the three special education teachers involved, they were eager to move ahead and request the BH District purchase their own subscription, thus allowing all the students, within this district to have access to this application. Using the results from this research might be a useful tool to have this request granted, allowing students to continue with the app used.

### **Limitations of the Study.**

There are several aspects of this study that limit the generalizability of its findings. The first limitation was the small sample size of only eight high school participants, which is sufficient when using single-subject research to create a visual analysis that illustrates the relationship between the baseline and intervention conditions.

This visual analysis, created within single-subject research, allows the researcher to compare fluctuations in level, trend, and variability of data within each phase but is insufficient in replications for external validity. One of the reasons that single-subject designs are used in the field of special education is that, different from other research designs, single-subject designs can provide causal inferences based on outcomes (Kratochwill et al., 2010). These inferences regarding the changes in student results caused by experimental treatments are valuable for establishing evidence-based practices in special education (Tankersley, Harjusola-Webb, & Landrum, 2008). The results of this study may or may not be representative of the results that would be achieved when using a larger sample size of 11<sup>th</sup> and 12<sup>th</sup>-grade students with LD. Single-subject designs provide a strong basis to confirm a functional relationship; however, it is not adequate to generalize this functional relationship to other settings, times, and persons. Meta-analytic studies can enhance the generalizability of single-subject design findings within a similar context. This is achieved through “statistical analysis of a large collection of results from individual studies for the purpose of integrating the finding” (Glass, 1976, p.3).

Another limitation of this study occurred within the maintenance phase of this study. As the study’s conclusion coincided with the end of the academic school year, the researcher was only able to complete one maintenance probe for each participant, due to Regents exams, final testing, and graduation. This data was sufficient to establish the permanency of the intervention effects yet limited in insights as to the permanency of the desired effect.

When working with adolescents in the collection of research, it often takes time to get them to slow down, focus, and understand the importance of the task at hand. The

third limitation of this study is the concept of student “buy-in;” the idea that an adolescent student will engage in a process only when he/she feels comfortable with the researcher, the tasks they are asked to complete and understand its importance to their personal space and time. This concept of “buy-in” was exacerbated for several students in this study, all of whom had one-foot-out-the-door as their graduation was quickly approaching. Student engagement was sufficient to ensure valid data collection, yet throughout this study, the researcher noticed a gradual rise in enthusiasm and commitment with regards to students’ participation. Qualitative data collected in weekly surveys illustrated this change of attitude through Evan and Mary’s response to the question, “Did you like working on Vocabulary.com this week?” Evan’s response week 1: “No, because I was tired, wanted to do my own work” compared to Evan’s response week 3: “Yes, because vocab.com helped me learn new works.” Mary’s response week 1: “No, because I’m not interested” compared to Mary’s response week 3: “Yes, because I got to learn a lot of words I didn’t know.” When working with this population, it is crucial for the researcher to create time, before data collection, to cultivate a professional relationship with students, stressing not only the importance of their participation but also the personal rewards gained from its completion.

### **Implications for Practice.**

Direct classroom instruction too often, does not provide adequate time for students to remember, understand, apply, analyze, and evaluate new vocabulary words. Instructional technology, in the form of software applications, can be used to provide students with the extra time they require to grasp new ideas and concepts. Mobile devices can provide students with independent learning strategies to support them both inside and

outside of the school environment (Eady, & Lockyer, 2013). This research indicates that based upon the engaging, repetitive, multi-modal nature of technological tools available in the 21st Century, vocabulary apps on a student's personal computer, used as independent word-learning strategies, can provide educators with a powerful tool to support direct instruction and foster vocabulary development for all students, especially those who are struggling readers and learning disabled. As educators, it is our responsibility to create independent learners. If the student feels confident in his or her ability to perform well on an academic task in a risk-free environment, the student will more likely try to complete the task independently (Clark, 2013). The ability of a learner to work effectively and independently while still gaining meaning is student-centered and promotes learner independence. Customized instruction, using applications on mobile devices, for struggling readers and students with LD, will lead to learner independence (Padron & Waxman, 1999; Proctor, Dalton, & Grisham, 2007).

### **Recommendations for Future Research.**

Future research would be valuable when examining how other educational apps, used on mobile devices, can be utilized as independent learning strategies to support direct instruction, both inside and outside of the classroom. Finding good quality education apps, that enhance research, teaching, and learning can be an intimidating task when one takes into consideration, there are over 500,000 educational apps to choose from. Research in this area would provide educators with a toolbox full of useful educational apps to support student achievement in their classrooms and learner independence.

Participants in this study worked with target words from an SAT preparation guide. Learning these words were beneficial for their age and stage yet having the ability to use target vocabulary words from a student's general education class might yield exciting and powerful results. Future research should be completed in this area to support all students, especially those with exceptionalities who require more time to understand and comprehend the required general education curriculum.

Students transitioning into high school are faced with the overwhelming adjustment to higher academic goals and standards. Academic demands are raised for these students who are already struggling with the adaptation to a new school environment. Another design to consider for future research would be the replication of this study, using a population transitioning into high school. The results of this suggested research might yield an independent learning strategy to assist students in this transition period, with maintaining and achieving their required academic goals.

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## Appendix A: Participants Weekly Survey

**End of the Week Check-in:****I WANT TO KNOW WHAT YOU THINK ...**

DID you LIKE working on *VOCABULARY.COM* this WEEK? WHY or WHY NOT?

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DO you THINK working on *VOCABULARY.COM* HELPED you UNDERSTAND and LEARN this week's TEN NEW vocabulary words? WHY? HOW?

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WOULD you USE the *VOCABULARY.COM* program ON YOUR OWN to LEARN new vocabulary words?

\_\_\_\_\_ YES

\_\_\_\_\_ NO

## Appendix B.1.: Parental Consent Form

**Parental Permission Form for Minors 12-17 Years of Age**

Dear \_\_\_\_\_,

Your child has been invited to take part in a research study to learn more about the effects of using technology as an independent learning strategy to support academic vocabulary acquisition. This study will be conducted by Donna Egan, as part of her doctoral dissertation. Her faculty sponsor is Dr. E. Francine Guastello, Ed.D., Literacy Department at St. John's University.

If you give permission for your child to be a participant, your child will take part in an intervention. He/she will be asked to use software, *Vocabulary.com*, on his/her school issued Chromebook, to work with vocabulary words selected by their ELA teacher. He/she will take part in a series of intervention assignments focused on academic vocabulary growth. In addition there will be quizzes, using *Vocabulary.com*, at the end of each instructional week to assess their understanding.

Participation in this study will take place during the regular school day as part of your child's special education Resource Room. Your child will be asked to use *Vocabulary.com* independently on their Chromebook, for 20mins, three times each instructional week. The study will run for approximately 12 weeks. There are no known risks associated with your child's participation in this research beyond those of everyday life. This research may help your child, the investigator, as well as the Hampton Bays School District, understand the benefits of using technology as an independent learning strategy to support classroom vocabulary instruction.

Confidentiality of your child's research records will be strictly maintained by using codes for participants' data and maintaining consent forms separate from data to make sure that the participant's name and identity will not become known or linked with any information they have provided.

Participation in this study is voluntary, you may refuse for your child to participate or withdraw your child at any time without penalty. If you chose to permit your child to participate his/her daily school attendance is strongly encouraged so as maintain consistency with regards to the collection of data. If there is anything about the study or your child's participation that is unclear or if you have questions or wish to report a research-related problem, you may contact Donna Egan at (516) 521-2108 (phone) [egand@stjohns.edu](mailto:egand@stjohns.edu) (email), or her faculty sponsor, Dr. E. Francine Guastello, Ed.D. at (718) 990-1475 (phone) [guastelf@stjohns.edu](mailto:guastelf@stjohns.edu) (email). For questions about your rights as a research participant, you may contact the University's Institutional Review Board, St. John's University, Dr. Raymond DiGiuseppe, Chair [digiuser@stjohns.edu](mailto:digiuser@stjohns.edu) (718) 990-1955 or Marie Nitopi, IRB Coordinator, [nitopim@stjohns.edu](mailto:nitopim@stjohns.edu) (718) 990-1440. You will receive a copy of this consent document to keep.

**Permission to Participate**

Name of Child: \_\_\_\_\_

Parent's Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## Appendix B.2.: Student Consent Form

**Consent Form for Minors  
12-17 Years of Age**



Dear \_\_\_\_\_,

You have been invited to take part in a research study to learn more about how working with a program on your computer might help you learn more vocabulary words. This study will be conducted by Donna Egan, as part of her doctoral dissertation. Her faculty sponsor is Dr. E. Francine Guastello, Ed.D., Literacy Department at St. John's University.

If you agree to be in this study, you will be asked to use a program, *Vocabulary.com*, on your computer, to work with vocabulary words selected by your ELA teacher. You will take part in a series of assignments focused on growing your vocabulary knowledge. You will be asked to use *Vocabulary.com* on your computer, for 20mins, three times each week, in your Resource Room class. The study will run for about 12 weeks. You will be helping Donna Egan and the Hampton Bays School District understand the benefits of using a program on a computer as an independent learning strategy to help students understand more vocabulary words.

Confidentiality of your research records will be strictly maintained; your name and information will be confidential. Participation in this study is voluntary, you may refuse to participate or withdraw at any time. If you chose to participate, please try to attend school each day. This will give Donna Egan the chance to collect the information she needs for this study.

If there is anything about the study or participation that is unclear or if you have questions, you may contact Donna Egan at (516) 521-2108 (phone) [egand@stjohns.edu](mailto:egand@stjohns.edu) (email), or her faculty sponsor, Dr. E. Francine Guastello, Ed.D. at (718) 990-1475 (phone) [guastelf@stjohns.edu](mailto:guastelf@stjohns.edu) (email).

For questions about your rights as a research participant, you may contact the University's Institutional Review Board, St. John's University, Dr. Raymond DiGiuseppe, Chair [digiuser@stjohns.edu](mailto:digiuser@stjohns.edu) (718) 990-1955 or Marie Nitopi, IRB Coordinator, [nitopim@stjohns.edu](mailto:nitopim@stjohns.edu) (718) 990-1440. You will receive a copy of this consent form to keep.

**Agreement to Participate**

Subject's Signature \_\_\_\_\_ Date: \_\_\_\_\_

# LEARNING NEW WORDS USING TECHNOLOGY

LET'S GET  
STARTED

LET'S Create a *Vocabulary.com* SHORTCUT on your Chromebook's Desktop :

1. OPEN and powerup your Chromebook. Click onto the internet using CHROME.
2. On the http:// line type the following link:  
<http://vocab.com/join/33V98FZ> then press ENTER.
3. SELECT Join this class. ENTER the information requested to complete your enrollment.
4. At the top right of you screen CLICK on the three dots in a column.  
SELECT "more tools" option.  
SELECT "create a shortcut" option.  
SELECT "create" option.
5. You should now see a green box with a white check on your desktop.
6. Close out of *Vocabulary.com*



CHECK the desktop on your Chromebook,  
You should HAVE this new ICON on your desktop.



CLICK on the ICON to test it, you should be directed straight to our class on *Vocabulary.com*.

You will be using this ICON each day to enter *Vocabulary.com* and complete practice and quiz assignments!

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IMPORTANT THINGS to REMEMBER ....

YOU will NEED to bring your CHROMEBOOKS to class EVERY DAY, charged and ready to go.

DAILY ATTENDANCE in your PERIOD 2 Support Class is extremely important during our study.

WHAT WILL WE BE DOING ON *Vocabulary.com*

VOCABULARY.COM PRACTICE assignments on Tuesdays, Wednesdays and Thursdays  
Here is a video to describe what a practice session looks like.

<https://www.vocabulary.com/help/videos/>

VOCABULARY.COM QUIZ assignments on Mondays, Tuesdays and Fridays  
Here is a video to describe what a quiz session looks like

<https://www.vocabulary.com/help/videos/>

Everyday you will be given a checklist of steps,  
you will check-off each step when you complete it,  
this is for both quiz or practice assignments in *Vocabulary.com*  
on your Chromebook.

NOW LET'S walk through the TUESDAY check-list together,  
it has both a quiz and practice assignment.

ANY QUESTIONS ..... ISSUES .... CONCERNS?

## LET THE RESEARCH BEGIN .....

We will begin working on *VOCABULARY.COM*  
NEXT MONDAY, MARCH 25<sup>TH</sup> in your  
PERIOD 8<sup>th</sup> support class.

Appendix D.1.: Monday's Daily Research Procedures Handout


**MONDAYS**

RESEARCH STUDY PROCEDURES:



NAME: \_\_\_\_\_  
 DATE: \_\_\_\_\_ PERIOD # \_\_\_\_\_

**READ and CHECK OFF** each step as you complete them!

(BASELINE #1)      TIME STARTED: \_\_\_\_\_      TIME COMPLETED: \_\_\_\_\_

#	STEPS TO TAKEN	COMPLETED Student Check	OBSERVED Fidelity Check
1	OPEN and powerup your Chromebook.		
2	CLICK on the <i>Vocabulary.com</i> icon (shortcut) located on your desktop.  You will be directed to our class on <i>Vocabulary.com</i> .		



EGAN 1

<p>3</p> <p>Under the <b>CLASS ASSIGNMENTS</b>, Look for <b>CURRENT ASSIGNMENTS</b> then <b>SELECT</b> the Quiz assignment entitled <b>TARGET WORDS WEEK</b>.</p>  <p>The screenshot shows the Vocabulary.com interface for a class named 'RR First Period'. It displays 'Class Stats' with 4 classes, 42,275 words, and 20 assignments. Under 'Class Assignments', it lists 'Weekly Target Words Week 1' and 'Weekly Target Words Week 2'. The 'Weekly Target Words Week 2' assignment is highlighted in yellow, indicating it is the current assignment to be selected.</p>	<p>4</p> <p><b>CLICK</b> on <b>Start the Quiz</b>.</p>  <p>The screenshot shows the 'Weekly Target Words Week 2' quiz interface. It includes a 'Start Quiz' button and a list of words to be tested, such as 'Benevolent', 'Cautious', 'Diligent', 'Eloquent', 'Fervent', 'Gregarious', 'Humble', 'Inevitable', 'Jubilant', 'Lustrous', 'Meticulous', 'Nimble', 'Ostentatious', 'Peculiar', 'Quintessential', 'Reticent', 'Sanguine', 'Trepidation', 'Vigilant', and 'Wield'. The 'Start Quiz' button is highlighted in yellow.</p>
--	--

5	<p>CLICK on the dot you feel contains the best response for ALL ten questions.</p> <ul style="list-style-type: none"> <li>- Answer all 10 questions in one sitting.</li> <li>- Do NOT open any other application on your Chromebook while completing the quiz.</li> </ul>													
6	<p>Vocabulary.com will alert you once you have answered ALL TEN questions.</p> <p><b>vocabulary.com</b></p> <p>YOUR QUIZ RESULTS: Weekly Target Words Week 2</p> <p>Congratulations! You've completed this 10 question quiz based on the list Weekly Target Words Week 2.</p> <p>Here's how you fared:</p> <table border="1"> <thead> <tr> <th></th> <th>Score</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>You</td> <td>(4/10) 40%</td> <td>36s</td> </tr> <tr> <td>Average</td> <td>40%</td> <td>36s</td> </tr> <tr> <td>Best</td> <td>40%</td> <td>36s</td> </tr> </tbody> </table> <p><a href="#">View Detailed Results</a></p> <p><b>STOP</b> Write down the number of correct answers found under the score column /10 <b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry.</p>		Score	Time	You	(4/10) 40%	36s	Average	40%	36s	Best	40%	36s	
	Score	Time												
You	(4/10) 40%	36s												
Average	40%	36s												
Best	40%	36s												
7	<p>You have successfully completed the assignment! Sign out of Vocabulary.com, CLICK on your name at the top right of the screen. This will take you to your account menu.</p>													
8	<p>CLICK on Log Out</p>													

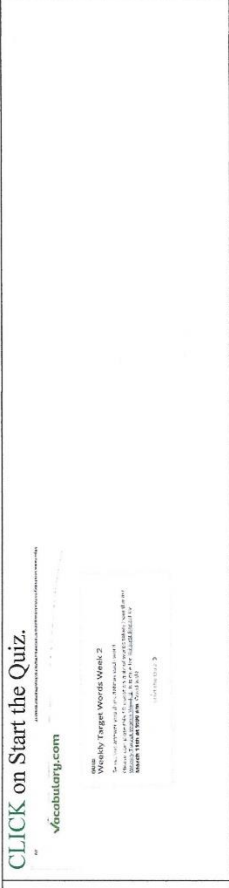
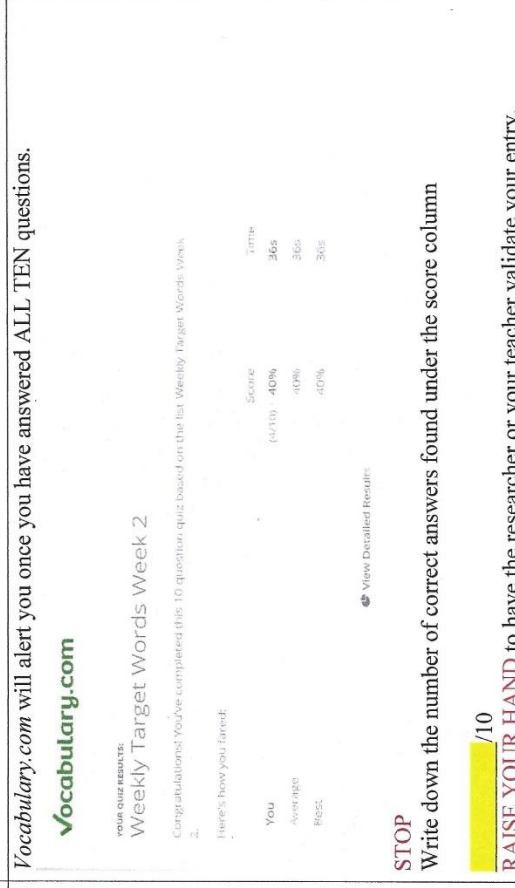
**READ and CHECK OFF** each step as you complete them!

(BASELINE #2) TIME STARTED: \_\_\_\_\_ TIME COMPLETED: \_\_\_\_\_

#	STEPS TO TAKEN	COMPLETED Student Check	OBSERVED Fidelity Check
1	OPEN and powerup your Chromebook.		
2	CLICK on the <i>Vocabulary.com</i> icon (shortcut) located on your desktop. 		
3	You will be directed to our class on <i>Vocabulary.com</i> Under the CLASS ASSIGNMENTS, Look for CURRENT ASSIGNMENTS then SELECT the Quiz assignment entitled #2 TARGET WORDS WEEK 		

EGAN 4



4		
5	<p>CLICK on the dot you feel contains the best response for ALL ten questions.</p> <ul style="list-style-type: none"> <li>- Answer all 10 questions in one sitting.</li> <li>- Do NOT open any other application on your Chromebook while completing the quiz.</li> </ul>	
6	<p><i>Vocabulary.com</i> will alert you once you have answered ALL TEN questions.</p>  <p><b>STOP</b> Write down the number of correct answers found under the score column  <span style="background-color: yellow;">      </span> / 10  <b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry.</p>	

7	You have successfully completed the assignment! Sign out of <i>Vocabulary.com</i> , <i>CLICK</i> on your name at the top right of the screen. This will take you to your account menu.		
8	<i>CLICK</i> on Log Out		

Appendix D.2.: Tuesday’s Daily Research Procedures Handout


**TUESDAYS**

RESEARCH STUDY PROCEDURES:



NAME: \_\_\_\_\_  
 DATE: \_\_\_\_\_ PERIOD # \_\_\_\_\_

**READ and CHECK OFF** each step as you complete them!


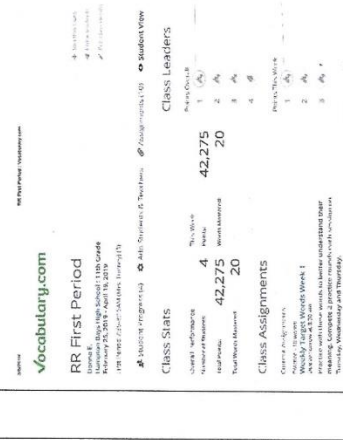
(BASELINE #1)      TIME STARTED: \_\_\_\_\_      TIME COMPLETED: \_\_\_\_\_

#	STEPS TO TAKEN	COMPLETED Student Check	OBSERVED Fidelity Check
1	OPEN and powerup your Chromebook.		
2	CLICK on the <i>Vocabulary.com</i> icon (shortcut) located on your desktop.  You will be directed to our class on <i>Vocabulary.com</i>		

EGAN 1

<p>3 Under the <b>CLASS ASSIGNMENTS</b>, Look for <b>CURRENT ASSIGNMENTS</b> then <b>SELECT</b> the <b>Quiz</b> assignment entitled <b>#3 TARGET WORDS WEEK</b></p> 	
<p>4 <b>CLICK</b> on <b>Start the Quiz</b>.</p> 	

5	<p><b>CLICK</b> on the dot you feel contains the best response for <b>ALL</b> ten questions.</p> <ul style="list-style-type: none"> <li>- Answer all 10 questions in one sitting.</li> <li>- Do <b>NOT</b> open any other application on your Chromebook while completing the quiz.</li> </ul>														
6	<p><i>Vocabulary.com</i> will alert you once you have answered <b>ALL TEN</b> questions.</p> <p><b>vocabulary.com</b></p> <p><b>YOUR QUIZ RESULTS:</b> Weekly Target Words Week 2</p> <p>Congratulations! You've completed this 10 question quiz based on the list: Weekly Target Words Week 2.</p> <p>Here's how you fared:</p> <table border="1"> <thead> <tr> <th></th> <th>Score</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>You</td> <td>(4/10) - 40%</td> <td>3:65</td> </tr> <tr> <td>Average</td> <td>40%</td> <td>3:65</td> </tr> <tr> <td>Best</td> <td>40%</td> <td>3:65</td> </tr> </tbody> </table> <p><a href="#">View Detailed Results</a></p> <p><b>STOP</b> Write down the number of correct answers found under the score column</p> <p><b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry.</p>		Score	Time	You	(4/10) - 40%	3:65	Average	40%	3:65	Best	40%	3:65		
	Score	Time													
You	(4/10) - 40%	3:65													
Average	40%	3:65													
Best	40%	3:65													
7	<p><b>You have successfully completed the assignment!</b> Sign out of <i>Vocabulary.com</i>, <b>CLICK</b> on your name at the top right of the screen. This will take you to your account menu.</p>														

8	CLICK on Log Out (INTERVENTION #1) TIME STARTED: _____ TIME COMPLETED: _____			
#	<b>STEPS TO TAKEN</b>		<b>COMPLETED Student Check</b>	<b>OBSERVED Fidelity Check</b>
1	OPEN and powerup your Chromebook.			
2	CLICK on the <i>Vocabulary.com</i> icon (shortcut) located on your desktop.			
3	You will be directed to our class on <i>Vocabulary.com</i> Under the <b>CLASS ASSIGNMENTS</b> , Look for <b>CURRENT ASSIGNMENTS</b> then <b>SELECT</b> the <b>PRACTICE</b> assignment entitled <b>TARGET WORDS WEEK</b> .			

EGAN 4

4 **CLICK** on Start the Practice.

**vocabulary.com**

Which of the following would a lawyer be most likely to **refute**?


- the notion that an accused person deserves a trial
- the suit that he or she wears during a trial
- the words of a witness who is unreliable
- the accurate typing of a court stenographer

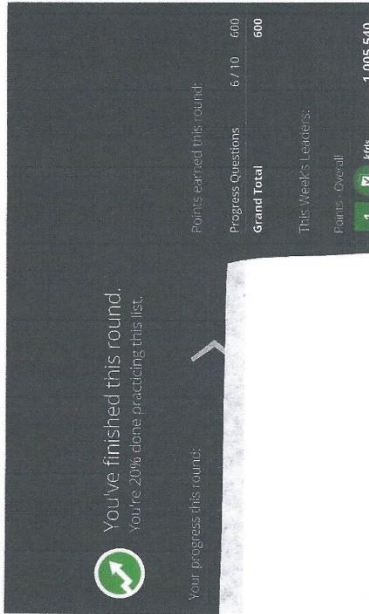
0% Currently Playing  
Practice: Weekly Target Words Week 2

Return to List Start Over

5	<p>CLICK on the dot you feel contains the best response for ALL ten questions.</p> <ul style="list-style-type: none"> <li>- Answer all questions in one sitting.</li> <li>- Do NOT open any other application on your Chromebook while practicing.</li> </ul> <p><b>WHEN ANSWERING</b> you can:</p> <ul style="list-style-type: none"> <li>- Click on <b>SPOKEN AUDIO</b> if you want to hear the questions read to you (using headphones as not to disturb your fellow classmates)</li> <li>- Click on <b>TAKE HINT</b> if you are not sure of a response. You will then be given three choices: 50/50 (takes away two choices) <i>word in the wild</i> (uses the word in a sentence) <i>definition</i> (will be given the definition of the word)</li> </ul>		
6	<p>Once you have selected a response to each question <b>READ</b> the “blurbs” that appear to the right of the question. They contain further explanation of the word and provide engaging examples of how it is used.</p> <p>To see your progress <b>LOOK</b> at the lower right of the screen. It lists the round you are on and the number of words you have practiced with.</p>		



<p>7</p>	<p><i>Vocabulary.com</i> will alert you once you have answered ALL practice questions.</p>  <p><b>STOP</b> Write down the number of correct progress questions found under the Points earned for this round column</p> <p><b>6</b> / 10 ROUND 1</p> <p><b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry.</p>		
<p>8</p>	<p>You have successfully completed this Practice Round! CLICK on the &gt; to complete a second practice round with these words.</p>		

9	<p><i>Vocabulary.com</i> will alert you once you have answered ALL practice questions.</p> <p><b>vocabulary.com</b></p>  <p>The screenshot shows a dark-themed interface with a green checkmark icon and the text: "You've finished this round. You're 20% done practicing this list." Below this, it says "Your progress this round:" followed by a progress bar. To the right, it displays "Points earned this round:", "Progress Questions 6 / 10", "Grand Total 600", "This Week's Leader:", and "Points Overall 1,005,540".</p>		
10	<p><b>STOP</b> Write down the number of correct progress questions found under the Points earned for this round column <b>6</b>/10 <b>ROUND 2</b></p> <p><b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry</p> <p><b>You have successfully completed TWO Practice Rounds!</b> Sign out of <i>Vocabulary.com</i>, <b>CLICK</b> on your name at the top right of the screen. This will take you to your account menu</p> <p><b>CLICK</b> on Log Out</p>		
11			

Appendix D.3.: Wednesday’s Daily Research Procedures Handout


**WEDNESDAYS**

RESEARCH STUDY PROCEDURES:

NAME: \_\_\_\_\_  
 DATE: \_\_\_\_\_ PERIOD # \_\_\_\_\_

**READ and CHECK OFF** each step as you complete them!

(INTERVENTION #2) TIME STARTED: \_\_\_\_\_ TIME COMPLETED: \_\_\_\_\_

#	STEPS TO TAKEN	COMPLETED Student Check	OBSERVED Fidelity Check
1	OPEN and powerup your Chromebook.		
2	CLICK on the <i>Vocabulary.com</i> icon (shortcut) located on your desktop. 		

You will be directed to our class on *Vocabulary.com*

3 Under the CLASS ASSIGNMENTS, Look for CURRENT ASSIGNMENTS then SELECT the PRACTICE assignment entitled TARGET WORDS WEEK .

The screenshot shows a page from Vocabulary.com with the following content:

**RR First Period**  
 Class of 42,275  
 Started on Monday, April 19, 2010  
 (18,985,820) (18,985,820) (18,985,820)

**CLASS STATS**

Class Size	42,275
Number of Members	4
Members	42,275
Members	20

**CLASS ASSIGNMENTS**

Class Assignments	42,275
Members	4
Members	42,275
Members	20

**CLASS LEADERS**

Class Leaders	42,275
Members	4
Members	42,275
Members	20

4 **CLICK** on Start the Practice.

**vocabulary.com**

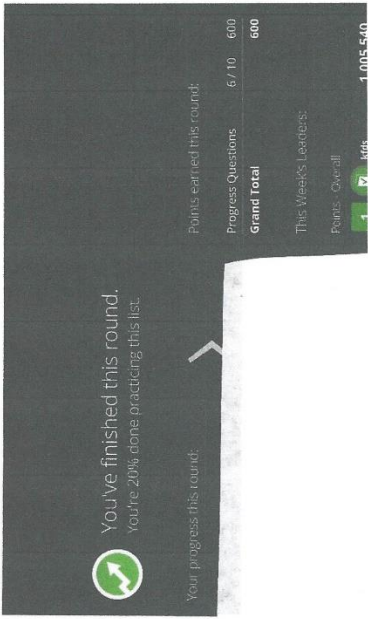
Which of the following would a lawyer be most likely to **rebut**?

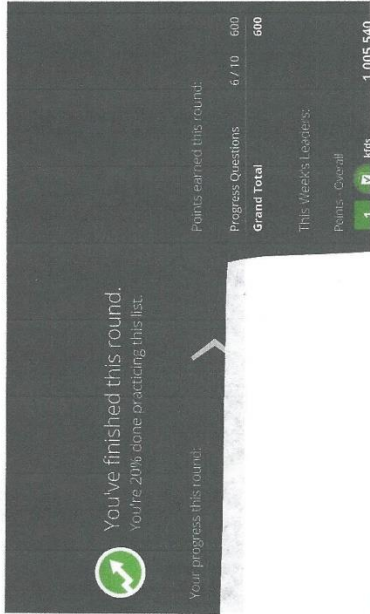
- the notion that an accused person deserves a trial
- the suit that he or she wears during a trial
- the words of a witness who is unreliable
- the accurate typing of a court stenographer

0% Currently Playing Practice: Weekly Target Words Week 2

Return to List Start Over

5	<p><b>CLICK</b> on the dot you feel contains the best response for ALL ten questions.</p> <ul style="list-style-type: none"> <li>- Answer all questions in one sitting.</li> <li>- Do NOT open any other application on your Chromebook while practicing.</li> </ul> <p><b>WHEN ANSWERING</b> you can:</p> <ul style="list-style-type: none"> <li>- Click on <b>SPOKEN AUDIO</b> if you want to hear the questions read to you (using headphones as not to disturb your fellow classmates)</li> <li>- Click on <b>TAKE HINT</b> if you are not sure of a response. You will then be given three choices: 50/50 (takes away two choices) <i>word in the wild</i> (uses the word in a sentence) <i>definition</i> (will be given the definition of the word)</li> </ul>	
6	<p>Once you have selected a response to each question <b>READ</b> the “blurbs” that appear to the right of the question. They contain further explanation of the word and provide engaging examples of how it is used.</p> <p>To see your progress <b>LOOK</b> at the lower right of the screen. It lists the round you are on and the number of words you have practiced with.</p>	

<p>7</p>	<p><i>Vocabulary.com</i> will alert you once you have answered ALL practice questions.</p> <p><b>vocabulary.com</b></p>  <p><b>STOP</b> Write down the number of correct progress questions found under the Points earned for this round column</p> <p><b>10</b> /10 ROUND 1</p> <p><b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry.</p>	
<p>8</p>	<p><b>You have successfully completed this Practice Round!</b></p> <p><b>CLICK</b> on the <b>&gt;</b> to complete a second practice round with these words.</p>	

9	<p><i>Vocabulary.com</i> will alert you once you have answered ALL practice questions.</p>  <p><b>STOP</b> Write down the number of correct progress questions found under the Points earned for this round column</p> <p><b>10</b> / 10    <b>ROUND 2</b></p> <p><b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry</p> <p><b>You have successfully completed TWO Practice Rounds!</b> Sign out of <i>Vocabulary.com</i>, <b>CLICK</b> on your name at the top right of the screen. This will take you to your account menu</p>		
11	<p><b>CLICK</b> on Log Out</p>		



Appendix D.4.: Thursday’s Daily Research Procedures Handout


**THURSDAYS**

RESEARCH STUDY PROCEDURES:

NAME: \_\_\_\_\_  
 DATE: \_\_\_\_\_ PERIOD # \_\_\_\_\_

**READ and CHECK OFF each step as you complete them!**

(INTERVENTION #3) TIME STARTED: \_\_\_\_\_ TIME COMPLETED: \_\_\_\_\_

#	STEPS TO TAKEN	COMPLETED Student Check	OBSERVED Fidelity Check
1	OPEN and powerup your Chromebook.		
2	CLICK on the <i>Vocabulary.com</i> icon (shortcut) located on your desktop.  You will be directed to our class on <i>Vocabulary.com</i>		

3 Under the CLASS ASSIGNMENTS, Look for CURRENT ASSIGNMENTS then SELECT the PRACTICE assignment entitled TARGET WORDS WEEK.

The screenshot shows a website interface for 'vocabulary.com'. It displays 'RR First Period' with a '4' next to it. Under 'Class Stats', it lists '4' for 'Number of Members' and '42,275' for 'Word Mastery'. Under 'Class Assignments', it lists '4' for 'Number of Assignments' and '42,275' for 'Word Mastery'. There are also sections for 'Class Leaders' and 'Class Assignments' with sub-sections for 'Prize Points' and 'Word Mastery'.

4

CLICK on Start the Practice.  
[vocabulary.com](http://vocabulary.com)

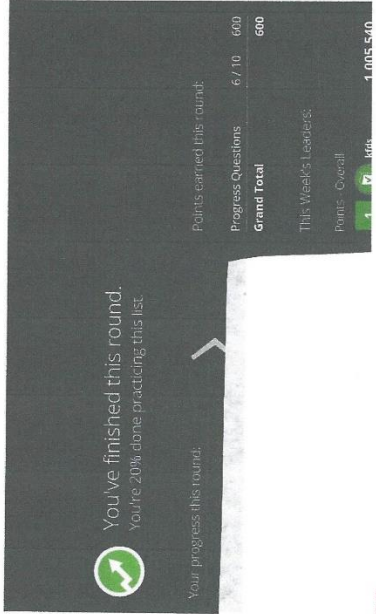
Which of the following would a lawyer be most likely to **refute**?

- the notion that an accused person deserves a trial
- the suit that he or she wears during a trial
- the words of a witness who is unreliable
- the accurate typing of a court stenographer

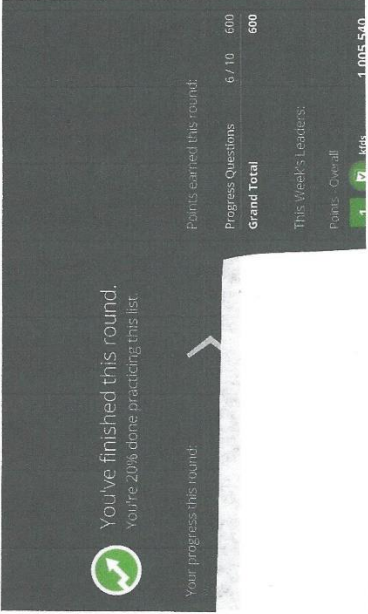
0% Currently Playing.  
 Practice: Weekly Target Words Week 2

Return to List Start Over

5	<p><b>CLICK</b> on the dot you feel contains the best response for ALL ten questions.</p> <ul style="list-style-type: none"> <li>- Answer all questions in one sitting.</li> <li>- Do NOT open any other application on your Chromebook while practicing.</li> </ul> <p><b>WHEN ANSWERING</b> you can:</p> <ul style="list-style-type: none"> <li>- Click on <b>SPOKEN AUDIO</b> if you want to hear the questions read to you (using headphones as not to disturb your fellow classmates)</li> <li>- Click on <b>TAKE HINT</b> if you are not sure of a response. You will then be given three choices:</li> </ul> <p><i>50/50</i> (takes away two choices)  <i>word in the wild</i> (uses the word in a sentence)  <i>definition</i> (will be given the definition of the word)</p>		
6	<p>Once you have selected a response to each question <b>READ</b> the “blurbs” that appear to the right of the question. They contain further explanation of the word and provide engaging examples of how it is used.</p> <p>To see your progress <b>LOOK</b> at the lower right of the screen. It lists the round you are on and the number of words you have practiced with.</p>		

7	<p><i>Vocabulary.com</i> will alert you once you have answered ALL practice questions.</p>  <p><b>STOP</b> Write down the number of correct progress questions found under the Points earned for this round column <b>600</b> /10 <b>ROUND 1</b></p> <p><b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry.</p>		
8	<p><b>You have successfully completed this Practice Round!</b> <b>CLICK</b> on the <b>&gt;</b> to complete a second practice round with these words.</p>		

EGAN 5

9	<p><i>Vocabulary.com</i> will alert you once you have answered ALL practice questions.</p> <p><b>vocabulary.com</b></p>  <p><b>STOP</b> Write down the number of correct progress questions found under the Points earned for this round column <b>600</b>/10 <b>ROUND 2</b></p>	
10	<p><b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry</p> <p><b>You have successfully completed TWO Practice Rounds!</b> Sign out of <i>Vocabulary.com</i>, <b>CLICK</b> on your name at the top right of the screen. This will take you to your account menu</p>	
11	<p><b>CLICK</b> on Log Out</p>	

Appendix D.5.: Friday’s Daily Research Procedures Handout


**FRIDAY'S**



RESEARCH STUDY PROCEDURES:

NAME: \_\_\_\_\_  
 DATE: \_\_\_\_\_ PERIOD # \_\_\_\_\_

**READ and CHECK OFF** each step as you complete them!

(POST-TEST) TIME STARTED: \_\_\_\_\_ TIME COMPLETED: \_\_\_\_\_

#	STEPS TO TAKEN	COMPLETED Student Check	OBSERVED Fidelity Check
1	OPEN and powerup your Chromebook.		
2	CLICK on the <i>Vocabulary.com</i> icon (shortcut) located on your desktop.  You will be directed to our class on <i>Vocabulary.com</i>		

<p>3</p> <p>Under the <b>CLASS ASSIGNMENTS</b>, Look for <b>CURRENT ASSIGNMENTS</b> then <b>SELECT</b> the Quiz assignment entitled <b>Post Test TARGET WORDS WEEK</b></p>  <p>The screenshot shows the 'RR First Period' class page on vocabulary.com. It displays 'Class Stats' with 4 members and a score of 42,275. Under 'Class Assignments', it lists 'Post Test TARGET WORDS WEEK 1' and 'Post Test TARGET WORDS WEEK 2'. The 'Post Test TARGET WORDS WEEK 2' assignment is highlighted in yellow.</p>	<p>4</p> <p><b>CLICK</b> on Start the Quiz.</p>  <p>The screenshot shows a button labeled 'Weeely Target Words Week 2' with a 'Start the Quiz' link next to it. The button is highlighted in yellow.</p>
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5	<p><b>CLICK</b> on the dot you feel contains the best response for ALL ten questions.</p> <ul style="list-style-type: none"> <li>- Answer all 10 questions in one sitting.</li> <li>- Do NOT open any other application on your Chromebook while completing the quiz.</li> </ul>														
6	<p><i>Vocabulary.com</i> will alert you once you have answered ALL TEN questions.</p> <p><b>vocabulary.com</b></p> <p>YOUR QUIZ RESULTS: Weekly Target Words Week 2</p> <p>Congratulations! You've completed this 10 question quiz based on the list Weekly Target Words Week 2.</p> <p>Here's how you fared:</p> <table border="1"> <thead> <tr> <th></th> <th>Score</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>You</td> <td>(4/10) 40%</td> <td>36s</td> </tr> <tr> <td>Average</td> <td>40%</td> <td>36s</td> </tr> <tr> <td>Best</td> <td>40%</td> <td>36s</td> </tr> </tbody> </table> <p><a href="#">View Detailed Results</a></p> <p><b>STOP</b> Write down the number of correct answers found under the score column</p> <p><b>RAISE YOUR HAND</b> to have the researcher or your teacher validate your entry.</p>		Score	Time	You	(4/10) 40%	36s	Average	40%	36s	Best	40%	36s		
	Score	Time													
You	(4/10) 40%	36s													
Average	40%	36s													
Best	40%	36s													
7	<p><b>You have successfully completed the assignment!</b> Sign out of <i>Vocabulary.com</i>, <b>CLICK</b> on your name at the top right of the screen. This will take you to your account menu.</p>														
8	<p><b>CLICK</b> on Log Out</p>														

End of the Week Check-in: I WANT TO KNOW WHAT YOU THINK ...

DID you LIKE working on VOCABULARY.COM this WEEK? WHY or WHY NOT?

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---

DO you THINK working on VOCABULARY.COM HELPED you UNDERSTAND and LEARN this week's TEN

NEW vocabulary words? WHY? HOW?

---

---

WOULD you USE the VOCABULARY.COM program ON YOUR OWN to LEARN new vocabulary words?

\_\_\_\_\_ YES \_\_\_\_\_ NO

## Appendix E.: 262 Word List from Prep Scholar

### PrepScholar Classes: 262 SAT Vocab Words You're Bound to See on Test Day

Now that you know what kinds of vocab questions are on the SAT let's go over the 262 words and definitions we suggest memorizing if you want to get high scores on SAT Reading and Writing.

To compile this list, we dug through all official SAT practice tests, looking at both the Reading and Writing sections (and not just the questions but the answer choices and passages, too). We also looked at SAT words from other online vocab lists.

Though you don't need to memorize all the words below, familiarizing yourself with most of them should help you better identify the tones of passages and make you more efficient at interpreting and answering questions correctly on SAT Reading and Writing.

Below, we give you each word, its part of speech, its definition, and an example sentence (or more if the word has multiple definitions/parts of speech). All words are listed in alphabetical order.

Word	Definition	Example Sentence
Abate	v. to become less active, less intense, or less in amount	As I began my speech, my feelings of nervousness quickly abated.
Abstract	adj. existing purely in the mind; not representing actual reality	Julie had trouble understanding the appeal of the abstract painting.
Abysmal	adj. extremely bad	I got an abysmal grade on my research paper!
Accordingly	adv. in accordance with	All students must behave accordingly.
Acquisition	n. the act of gaining a skill or possession of something	Language acquisition is easier for kids than it is for adults.
Adapt	v. to make suit a new purpose v. to accommodate oneself to a new condition, setting, or situation	The US has adapted many foreign foods to better suit the tastes of Americans. Dogs are known for their ability to quickly adapt to their environments.

Adept	adj. having knowledge or skill (usu. in a particular area)	Beth loves playing the piano, but she's especially adept at the violin.
Adequate	adj. having sufficient qualifications to meet a specific task or purpose	Though his resume was adequate, the company doubted whether he'd be a good fit.
Advent	n. the arrival or creation of something (usu. historic)	The world has never been the same since the advent of the light bulb.
Adversarial	adj. relating to hostile opposition	An adversarial attitude will make you many enemies in life.
Advocate	n. someone who promotes or defends something v. to defend or promote something (usu. a belief, theory, opinion, etc.)	I am an advocate for free higher education. Environmental protesters often advocate for cleaner energy practices.
Aesthetic	adj. relating to beauty or refined taste	The aesthetic decorations at the wedding reception made you feel as if you were a character in a fairy tale.
Afford	v. to be able to buy v. to be able to spare	He's saving money so he can afford to buy a new car. I can't afford to lose any more pencils!
Agitate	v. to promote something (usu. a cause)	They're agitating for better health care.
Allow	v. to permit or consent to	US law allows citizens to speak freely.
Allude	v. to make a secretive mention of something	She alluded to the problem at hand but didn't say anything more about it.
Altercation	n. a noisy argument or confrontation	Greg got into an altercation with a stranger at the bar.
Ambiguous	adj. unclear or vague in meaning	Her ambiguous statement made me question whether she could be trusted.

Ambitious	adj. having a powerful desire for success or achievement	Penny is so ambitious, she wants to be president someday.
Ambivalence	n. the state of being uncertain or stuck between two or more options	His ambivalence prevented him from immediately signing the contract.
Analogous	adj. similar but not identical	Green onions are considered analogous to spring onions.
Annihilate	v. to destroy or cause devastating destruction	The dictator sent orders to annihilate the group of rebels.
Anomaly	n. something different from the norm	This result is an anomaly and very rarely happens.
Anticipate	v. assume to be likely to happen	The party was just as fun as I had anticipated it would be.
Antipathy	n. a strong feeling of dislike	Her antipathy toward the professor was obvious: she rolled her eyes whenever he entered the classroom.
Apex	n. the highest point of something	The spring play was the apex of our school year.
Apprehension	n. fearful expectation of something	Her apprehension to leave her house resulted in her missing the train.
Articulate	v. to clearly express in words	She articulated her opinion on the price of the house.
Artificial	adj. something made; not occurring naturally	Many candies use artificial flavors to make them taste fruity.
Assertion	n. a strong declaration	His assertion that sharks are mammals made everyone laugh.
Austere	adj. extremely plain adj. stern and forbidding adj. relating to self-denial	He lived in a small, austere cabin in the middle of the woods. My boss had an austere expression on her face.

		An austere lifestyle, like that of monks, isn't for everybody.
Authenticity	n. the quality of being real and true instead of fake and contrived	The police officer doubted the authenticity of the suspect's story.
Avenue	n. an intangible path or approach to something	The company has decided to pursue other avenues.
Avid	adj. actively interested in or enthusiastic about something	Gerald is an avid soccer fan.
Basic	adj. relating to the foundation or basis of something	You have to start with basic Russian before you can move on to the advanced level.
Bear	v. to have as a characteristic v. to have (a child) v. to bring forth v. to put up with	She bears a strong resemblance to your mother. Judy will bear her first child last year. My garden is going to bear pumpkins this year. I can't bear her complaining any longer!
Benevolent	adj. kind, generous	Many cultures believe in benevolent spirits.
Bias	n. a preconception that prevents objectivity	It's important to avoid bias when investigating a crime.
Bittersweet	adj. tinged with a feeling of sadness	The ending of the romance movie was bittersweet.
Bolster	v. to support, strengthen, or fortify	If we work together, we should be able to lift and then bolster the couch.
Boost	n. an increase or growth v. to increase or make grow	The boost in profits was a welcome change. In order to boost profits, you need to cater to your customers.

Brawl	n. an intense, loud fight v. to fight loudly and disruptively	A brawl broke out at school today after one student accused another of cheating.  The two students brawled for an hour.
Brevity	n. the quality of being brief or terse	The brevity of their time together made it all the more romantic.
Candid	adj. direct, blunt	Josh is candid about his desire to become an actor.
Candor	n. the trait of being honest and frank	I admire her candor, especially when nobody else bothers to speak up.
Capitalize	v. to use to your advantage	I'd like to capitalize on your math skills by having your work the cash register.
Capture	v. to trap or take possession of v. to successfully represent or imitate v. to captivate, mesmerize v. to catch or seize	The spy was captured by the enemy.  Your painting beautifully captures the ephemerality of life.  I was captured by her beauty.  The cops captured the criminal three days after the incident.
Civic	adj. relating to the city or citizens	Voting is a civic duty.
Clinical	adj. emotionally unattached (usu. used in medical or scientific setting)	Her clinical approach to situations allows her to handle them more effectively.
Clout	n. special advantage or power	Children of rich and famous people often believe they have a lot of clout.
Coarse	adj. indicating a rough texture adj. lacking refinement or sophistication	The horse's mane was coarse, as if it had never been washed.  The queen's coarse way of speaking surprised the other members of royalty.

Coincide	v. to happen at the same time	It wasn't until after I booked my ticket that I realized the concert coincided with my finals.
Commission	n. the use of payment to request something (e.g., a service or product)	This painting was commissioned by a rich merchant in 1589.
Comparable	adj. able to be compared	This novel is comparable to Huckleberry Finn.
Competent	adj. sufficiently qualified	We need to hire a competent web developer to create a good website for our company.
Complacent	adj. satisfied, with no desire to change or improve	Though he had never won any awards or even been published, he was complacent with his life as a poet.
Complement	v. to make perfect or complete	This wine perfectly complements this platter of gourmet cheese.
Concede	v. to be forced to agree or surrender v. to admit to a transgression	With no chance of winning the battle, the army at last conceded. Dan conceded to pranking his sister.
Conceive	v. to imagine or come up with	The plan to build the city was originally conceived in the early 1900s.
Condone	v. to overlook, approve, or allow	She couldn't condone her daughter's rebellious behavior.
Conducive	adj. able to bring about or be suitable for	The noisy students hardly made the campus library conducive to studying.
Conduct	v. to control or manage v. to behave a certain way	The group conducted their research abroad last year. Be sure to conduct yourself accordingly.
Confide	v. to share something secretive with someone	She confided all of her biggest secrets in her best friend.



Confine	v. to put limits on; to restrict	We are going to confine the use of this drinking fountain.
Consensus	n. overall agreement	After weeks of debating, the panel finally came to a consensus.
Constitute	v. to form or compose (part of) something	The desire for equality constituted the civil rights movement.
Contemplate	v. to think deeply about	She contemplated telling her teacher about the cheating student.
Contend	v. to maintain or assert (an opinion)	The president contends that the US government will not negotiate with terrorists.
Contradict	v. to be in contrast with	The camera footage contradicts his alibi.
Controversial	adj. highly debatable and causing contention	Millions of viewers watched the controversial debate take place.
Conventional	adj. abiding by accepted standards	She lives a conventional life in the suburbs.
Convey	v. to pass on or transfer (information)	I have trouble conveying my thoughts in French.
Conviction	n. a firm belief in something	Her religious convictions prevent her from eating meat.
Corroborate	v. to provide evidence for; to back up (a claim)	The note signed by her father corroborates her claim that she was absent from class that day.
Counteract	v. to work in opposition to	This ingredient seems to counteract the other ones.
Counterargument	n. an argument used to criticize or dismantle another argument	Make sure to include a counterargument in your essay so that you can show you've considered the topic from all perspectives.
Counterproductive	adj. hindering the achievement of a goal	Bill's idea to take a shortcut was ultimately counterproductive: it took us twice as long to get to the train station.

Culmination	n. the final act or climax	The culmination of the performance was unforgettable.
Cultivate	v. to foster the growth of	Teachers don't just pass on new information to students—they cultivate their academic potential.
Decree	v. to declare formally and with authority	The president decreed that Halloween would henceforth be a national holiday.
Deference	n. respect; regard	Her deference to the elderly makes her the perfect candidate for an internship at the retirement center.
Deficient	adj. not enough in degree or amount	I feel as though the sources for my paper are deficient.
Demonstrate	v. to do as an example v. gives evidence for	Could you demonstrate the dance move for me?  This book's use of words such as "grim" and "bleak" demonstrates the author's mournful tone.
Demur	v. to object to	She demurred at my request to transfer to a different department.
Deplete	v. to (over)use over time (usu. resources)	The lost campers quickly depleted their supply of food.
Desolate	adj. bare, barren, empty	The moon is one giant, desolate landscape.
Devise	v. to come up with (a plan)	Lana devised a plan to make herself famous.
Dilemma	n. a problem, usually requiring a choice between two options	The main dilemma is whether to pay for a commercial or not.
Diligence	n. conscientiousness; the quality of being committed to a task	Diligence and confidence will get you far in life.
Diminish	v. to become smaller in scope or degree	The itchiness of mosquito bites usually starts to diminish after a few days.

Dire	adj. hopeless and dangerous or fearful	When the police didn't explain what was happening right away, Jane knew that the situation must be dire.
Discord	n. disagreement	Disputes over money caused intense discord in the family.
Disdain	n. a lack of respect and strong dislike (toward something or someone)	He looked at me with such disdain that I immediately knew the job wouldn't work out.
Dismay	n. hopelessness, stress, or consternation v. to fill with woe or apprehension	To Nick's dismay, he got an F on the test. Many were dismayed by the town's implementation of metered parking.
Disparage	v. to belittle or speak down to	A good boss is stern but never disparages his or her employees.
Dispatch	v. to send off a message or messenger	The mother dispatched her daughter to their neighbor's house.
Diversification	n. the act of becoming diverse	Lately, there's been noticeable diversification of students at higher institutions.
Doctrine	n. a principle, theory, or position, usu. advocated by a religion or gov't	Devoutly religious people often live their lives according to their doctrines.
Dominion	n. power and authority (usu. over a territory) n. a legal territory	The country claimed to have dominion over parts of Russia. Puerto Rico is a dominion of the US.
Dreary	adj. sad, gloomy, dull	The gray clouds in the sky made the day feel dreary.
Dubious	adj. doubtful, questionable	The man's claims to the throne were dubious since nobody knew where he'd come from.
Eccentric	adj. peculiar or odd; deviating from the norm	She's a little eccentric but still fun to be around.

Egregious	adj. extremely bad	After cheating on the exam, Emily began to feel as though she'd made an egregious mistake.
Eloquent	adj. having refined or expressive communication skills (in speaking or writing)	His speech was not only eloquent but also extremely compelling.
Eminent	adj. superior or distinguished; high in position or status	Our town made news when the eminent magician came to perform at our local theater.
Emit	v. to discharge, give forth, or release	Plants consume carbon dioxide and emit oxygen.
Emphatic	adj. very expressive; using emphasis	Her emphatic smile told me she was excited to ride the roller coaster.
Empirical	adj. derived from experience, observation, or an experiment	You need empirical evidence to support your claim.
Endow	v. to equip or bestow (usu. a quality or ability)	According to the myth, the gods endowed him with the gift of healing.
Endure	v. to withstand, sustain, or hold out against	I can't endure this wait any longer. Will Stanford accept or reject me?
Entail	v. to involve or include	A doctoral program entails long nights and a heavy workload.
Entrenched	adj. firmly established	Her face will forever be entrenched in my memory.
Enumerate	v. to specify or count	I can't enumerate how many times I've had to remind my students when their papers are due.
Envy	n. excessive jealousy v. to admire and be jealous of	His envy of her is quite obvious. She envies her coworker's social skills.
Erratic	adj. having no fixed course; deviating from the norm	The car became erratic after slipping on ice.

Establish	v. to enact v. to found (a business, group, school, etc.)	They established a law that made it illegal to drive after drinking any amount of alcohol. Our group established a new branch in Chicago.
Evoke	v. to draw forth or call up	Horror movies are great at evoking fear.
Exacerbate	v. to make worse or increase the severity of	The doctor told me not to run as it can exacerbate my knee injury.
Excel	v. to do something extremely well or to be superior in	She was a well-rounded student but excelled especially in science.
Exert	v. to put into use (usu. as effort)	Don't exert all of your energy at once.
Exhilarating	adj. invigorating, stimulating, or exciting	The music playing at the club was catchy and exhilarating.
Expend	v. to use up (as in energy or money)	Be careful not to expend all your energy in the first half of a marathon.
Exploit	v. to use selfishly or for profit	The shoddy company exploited its workers by paying them extremely low wages.
Facilitate	v. to aid the progress of	In grad school, advisors facilitate students' research and offer constructive criticism.
Feasibility	n. the practicality or possibility of something	The feasibility of her project was doubtful; she'd have to go all the way to Antarctica and back before the school year ended.
Ferocity	n. viciousness, violence	The lion is just one wild animal known for its ferocity.
Fiscal	adj. related to (government) money	Fiscal policy is how the government uses money to influence the economy.
Flourish	v. to prosper, grow, or make fast progress	After one year, the tiny plants had flourished into a breathtaking garden.

Fluctuate	v. to be unstable; to rise and fall	Stocks can fluctuate on a daily basis, making it difficult to determine when to buy or sell one.
Foment	v. to stir up	The civilians accused their leader of fomenting political unrest.
Foreseeable	adj. capable of being predicted or anticipated	I can't imagine aliens visiting us in the foreseeable future.
Frankly	adv. directly, clearly	I frankly don't see the point in learning to drive.
Freewheeling	adj. carefree	His freewheeling attitude often got him in trouble at work.
Fundamental	adj. the most essential or most basic part	A thesis is arguably the most fundamental part of an essay.
Galvanizing	adj. thrilling, exciting, stimulating	The galvanizing performance left everyone spellbound.
Geriatric	adj. relating to old age	I became interested in geriatric medicine shortly after my grandfather passed away from cancer.
Hostile	adj. harmful, dangerous	The voices around the corner sounded angry, hostile even.
Hypothetical	adj. supposed; related to a hypothesis	For my physics homework, I must come up with a hypothetical situation.
Ignominious	adj. publicly shameful or humiliating	The politician's expensive campaign ultimately ended in ignominious defeat.
Impart	v. to transmit, bestow, or disclose	Parents must impart common sense to their children.
Impartiality	n. the equal and objective treatment of opposing views	To ensure impartiality, we require everyone to follow these general guidelines.
Imposing	adj. impressive (esp. in size or appearance)	The old mansion was imposing in its huge size and gothic architecture.

Imposition	n. an unnecessary burden	If it's not too much of an imposition, could you proofread my paper?
Imprudent	adj. not cautious or prudent; rash	Backpacking abroad can be fun, but don't be imprudent about money.
Incite	v. to encourage or stir up	Her hateful words incited anger in the crowd.
Indifference	n. apathy, emotional detachment	The girl's indifference toward her brother upset their parents.
Indiscriminately	adv. randomly; with little or no distinction	Lottery winners are chosen indiscriminately.
Indulge	v. to give into; to satisfy or gratify	My friend loves to indulge in cheesy romance movies.
Infer	v. to guess, conclude, or derive by reasoning	You can infer from this quotation that the writer didn't care for "pretty" language.
Innovative	adj. novel or new (esp. as an idea or invention)	Her invention was incredibly innovative and won her multiple awards.
Insatiable	adj. can't be satisfied	A vampire's thirst for blood is said to be insatiable.
Inversion	n. a reversal	The culture's norms were an inversion of our own.
Invoke	v. to call on; to appeal to (e.g., a higher power)	The shaman attempted to invoke a demon.
Irreconcilable	adj. incapable of being in harmony or agreed upon	The couple's differences were ultimately irreconcilable, giving them no choice but to break up.
Lament	v. to feel sorrow for; to mourn	Susan lamented her missed chance at going to Europe with her high school class.
Locomotion	n. movement	Physics involves the study of locomotion.

Lucrative	adj. capable of making a lot of money; profitable	Writing books isn't a particularly lucrative career, unless you're J.K. Rowling.
Malicious	adj. harmful, spiteful	The malicious spirit drove out the inhabitants from their home.
Malleable	adj. capable of being molded or changed	Children's minds are malleable but only for so long.
Materialistic	adj. superficial; focus on material possessions	Many people accuse Americans of being materialistic.
Melodramatic	adj. extravagant or exaggerated (as of a melodrama)	The melodramatic play was well liked by the audience.
Modest	adj. simple and humble adj. small in size or amount	They moved into a modest house in the countryside. I received a modest sum of money for my help at the company event.
Modify	v. to change, alter, or tweak	Dr. Nguyen modified the gene so that it wouldn't carry the disease.
Momentous	adj. historically significant	Her win in the election was momentous.
Novel	adj. new, innovative	We are looking for novel ways to approach the project.
Nuance	n. a subtle difference in meaning	Body-language experts even understand the nuances of facial expressions.
Null	adj. legally void and ineffective	The government declared their marriage null.
Objectivity	n. judgment based on observations instead of emotions or opinions	In scientific research, objectivity is of utmost importance.
Obsolete	adj. no longer used; rare or uncommon	Historians assumed record players would be obsolete by now, but in fact they're making a huge comeback.



Omnipotent	adj. almighty and all powerful	Gods are omnipotent beings who can control human destiny.
Onset	n. the beginning or early stages	At the onset of her career as a lawyer, things were looking up.
Opine	v. to openly express an opinion	The new employee opined at the company meeting.
Ornate	adj. highly detailed and decorated	That ornate silverware must be worth thousands of dollars!
Oust	v. to remove or force out of (usu. a position or office)	Sick and tired of putting up with his bad moods, the pirates ousted their captain.
Paramount	adj. predominant, superior, most important	Our paramount concern is the safety of our employees.
Peculiar	adj. strange, bizarre	Upon entering the abandoned house, Kate experienced a peculiar feeling, as if someone was watching her.
Perish	v. to die; to pass away	According to the news, nobody perished in the fire.
Persecute	v. to cause suffering to	They will persecute anyone who doesn't agree with their views of the world.
Petulant	adj. cranky, pouty, irritable	Petulant children are especially difficult to care for.
Pinnacle	n. highest level or degree	Many believe that composers such as Beethoven and Mozart represent the pinnacle of classical music.
Pitiable	adj. deserving pity	The frail-looking dog was pitiable, so I gave it some food and took it inside to care for it.
Plausible	adj. reasonable and possibly true	Her story is plausible, but that doesn't mean she's telling the truth.
Postulate	v. to assert	The literary critic postulates that romanticism and naturalism are actually interconnected.

Potent	adj. having great influence adj. having a strong, chemical effect	The bald eagle is a potent symbol of the US. The potion was definitely potent—it healed my wounds immediately!
Pragmatic	adj. practical, useful	It's not necessarily more pragmatic to study engineering than it is to study philosophy.
Precedent	n. an example or subject from earlier in time	This change in law is without historical precedent.
Predecessor	n. someone who comes before you (usu. in position or office)	My predecessor gave me many tips for running the office.
Prescribe	v. to command orders v. to issue authorization for medications	The directions for our essay prescribe a length of at least ten pages. A doctor must prescribe you this medication before you can begin taking it.
Principle	n. basic truth, assumption, or rule	Remember the universal principle: treat others as you want them to treat you.
Prohibit	v. to command against, to outlaw	Alcohol was prohibited in the US in the 1920s.
Prompt	adj. punctual, on time n. a cue to begin something; instructions v. to incite, propel, or cause to act	She is always prompt when it comes to turning in her homework. I had to write an essay based on a prompt. The possibility of a scholarship prompted him to apply to Harvard.
Promulgate	v. to put into law or formally declare	The ruler will at last promulgate an amnesty with the neighboring countries.
Prosecute	v. to bring criminal action against someone (in a trial)	The suspect was prosecuted yesterday.

Provocative	adj. intending to provoke, inspire, or arouse	Her nude paintings are considered quite provocative.
Qualitative	adj. involving qualities of something (features and content)	I noticed a qualitative change in her paintings.
Quantitative	adj. involving quantities (numbers and amounts)	We must conduct a quantitative analysis.
Quirk	n. a strange habit	His biggest quirk is his love of old marbles.
Ramify	v. to split into two or more branches	Cars ramified throughout the world in the twentieth century.
Rash	adj. without attention to danger or risk	Her rash decision to pass the car nearly resulted in a crash.
Raw	adj. unrefined adj. not processed; uncooked (as in food)	He's got raw talent as a singer, but he needs to work on his performance skills.  In some countries, such as Japan, it is normal to eat raw fish.
Readily	adv. right away and without difficulty	Water was readily available at different points in the race.
Reconsideration	n. thinking again about a previously made choice	The judges' reconsideration of her performance resulted in her victory.
Reform	n. a change for the better; improvement v. to improve via change	The reform made it so that only those 18 and older can legally drive.  The government reformed its vague policies on marijuana use.
Refute	v. to prove to be untrue, unfounded, or incorrect	The student refuted the professor's claim in class.
Reinforce	v. to strengthen or add support to	We can use these pipes to reinforce the structure.
Reluctantly	adv. somewhat unwillingly	Max reluctantly agreed to see the horror movie with his friends.

Renounce	v. to give up (usu. power or a position) v. to cast off	Our CEO renounced her position yesterday. He renounced his friend after he caught her stealing money from him.
Reproach	v. to criticize	The mother reproached her daughter's school for making students come in during a blizzard.
Repudiate	v. to refuse to recognize as true v. to cast off	The father repudiated his son's marriage. She repudiated her son once she found out he'd married someone without telling her.
Retention	n. the act of keeping something	Water retention can make you weigh more on certain days.
Satiated	adj. satisfied (usu. in hunger)	I felt satiated after eating a snack.
Savvy	adj. having practical intelligence or knowledge	My brother is not very savvy when it comes to using public transportation.
Scandalous	adj. morally offensive, often causing damage to one's reputation	The scandalous politician decided it was best to resign from office.
Scorn	v. to look down on with disdain	It's difficult for me not to scorn those who use improper grammar.
Scrupulous	adj. paying great attention to detail	I am a scrupulous proofreader and never miss an error.
Scrutinize	v. to examine carefully and critically	The teacher scrutinized her students' essays.
Secrete	v. to produce or release (a substance)	Trees secrete a sticky substance called sap.
Sentiment	n. opinion n. a tender or moving gesture	I am of the sentiment that you should never give out your passwords to anyone.

		Even though I'm not a big fan of porcelain dolls, I appreciated the sentiment.
Sheer	adj. so thin that light can shine through	The curtains on the window were so sheer you could clearly see inside the house.
Simple	adj. easy; not complex adj. undecorated	This math problem is so simple even a first grader can solve it. The simple beauty of the ocean is what makes it memorable.
Sinister	adj. ominous, evil	Medieval peasants believed sinister demons could harm humans.
Solidarity	n. the joining of commonalities or common purposes among a group	I stood in solidarity with other female students by refusing to wear the school's sexist uniform.
Sparingly	adv. insufficiently, meagerly, or in a restricted manner	Due to my condition, I must eat salt sparingly.
Spawn	v. to release eggs v. to call forth or generate	Frogs typically spawn in ponds. The topic spawned an ongoing debate among his family members.
Spur	v. to stimulate or incite	Her bravery spurred others to act.
Squalid	adj. run-down, sordid, or sleazy	The squalid cabin needed a new roof and an exterminator.
Stark	adj. very plain; devoid of any details or features	Looking out at the stark landscape, I felt a keen sense of isolation.
Static	adj. motionless adj. changeless	The ball is static. Her life has been static for the past three years.
Subordinate	adj. lower in rank n. someone lower in rank	The subordinate officers work every day. My subordinate will check you in.

	v. to make dependent on or put at a lower rank	You aren't my boss—you can't subordinate me to the role of receptionist!
Subsequently	adv. happening later or after something	I subsequently went home.
Substantial	adj. very large in amount or degree	I was shocked to find a substantial amount of money beneath the park bench.
Substantiate	v. to strengthen with new evidence or facts	It is important for scientists to substantiate their theories whenever possible.
Subtle	adj. hard to detect or analyze	I detected in her expression a subtle hint of irritation.
Sufficient	adj. enough; just meeting a requirement	These boxes should be sufficient for our move.
Surly	adj. unfriendly; inclined to anger	The bartender was a surly fellow who wasn't afraid to start a fight.
Surmount	v. to get on top of or overcome	They managed to surmount the language barrier by using a translation app.
Susceptible	adj. to be vulnerable (to something)	Children are more susceptible to certain illnesses than adults are.
Tactful	adj. skilled at dealing with people	Her tactful attitude toward our class made her one of my favorite teachers.
Taut	adj. pulled tight	The rubberband was taut and ready to be fired.
Teeming	adj. abundantly filled (usu. with living organisms)	Doorknobs are not as clean as they look and are often teeming with germs.
Temperament	n. usual mood or feelings	She had a hostile temperament, making her intimidating to most people.

Tentative	adj. not yet finalized	We haven't made any official arrangements yet, but the tentative location for our wedding is Hawaii.
Transparent	adj. see-through; so thin that light can shine through adj. truthful or easy to perceive	Stained window glass isn't as transparent as regular window glass is. She was transparent about her plans to end her marriage.
Treacherous	adj. dangerous and unstable	The journey was becoming treacherous, but they continued on regardless.
Tremendous	adj. very large, good, or bad in degree or size	Tremendous news! You don't have to repay your loans!
Ubiquitous	adj. being everywhere at once	Cell phones are ubiquitous these days.
Unadorned	adj. undecorated, plain	Though the dress was cheap and unadorned, it was by far her favorite one on the rack.
Undermine	v. to weaken or subvert (usu. gradually or secretly)	Parents should take care not to constantly undermine their children.
Underscore	v. to emphasize or give additional weight to	This sentence seems to underscore the overall meaning of the passage.
Undulate	v. to move as ripples or in a wavy pattern	Belly dancers are known for their ability to skillfully undulate their stomachs.
Unilateral	adj. one-sided	The unilateral decision was deemed unfair by the other party involved.
Unjust	adj. unfair; not justified	The court's decision is unjust—he should not go free.
Unmitigated	adj. downright, utter, total	My speech was an unmitigated disaster!
Unprecedented	adj. completely new and never having happened before; historic	The number of protestors was unprecedented.

Unveil	v. to make visible; to reveal	We plan to unveil our plans for the new company project on Sunday.
Urge	n. desire or impulse v. to encourage or persuade	He had the urge to tell his parents about his acceptance to Columbia but decided against it.  She urged her sister to apply to Stanford.
Validate	v. to prove or declare valid	Your selfish actions do not validate your feelings for me.
Viability	n. ability to be done in a practical or useful way	The viability of the solution is questionable.
Vital	adj. urgently necessary	It is vital that you respond by the deadline.
Vow	v. to promise	My brother quickly broke his vow to never eat chocolate again.
Warrant	v. to prove to be reasonable	Wanting to look cool in front of your friends doesn't warrant breaking the law.
Yield	n. production of an amount v. to give way to or surrender to v. to produce or supply	The farmer's annual pumpkin yield exceeded 10,000.  Cars turning right on red must yield to oncoming traffic.  Our experiment yielded many unique-looking vegetables.



## Appendix F.: 262 Word List Randomized

### List Randomizer

There were 262 items in your list. Here they are in random order:

1. Counteract
2. Civic
3. Diligence
4. Conducive
5. Dreary
6. Endure
7. Inversion
8. Prosecute
9. Authenticity
10. Annihilate
11. Teeming
12. Refute
13. Surly
14. Competent
15. Plausible
16. Endow
17. Reform
18. Conceive
19. Contend
20. Yield
21. Validate
22. Substantial
23. Ambiguous
24. Imposition
25. Evoke
26. Sparingly
27. Clinical
28. Promulgate
29. Retention
30. Desolate
31. Bear
32. Imprudent
33. Counterargument
34. Indifference
35. Geriatric
36. Dominion
37. Freewheeling
38. Apprehension
39. Impart
40. Substantiate
41. Dilemma
42. Pitable
43. Erratic
44. Postulate
45. Capitalize
46. Susceptible
47. Nuance
48. Empirical

49. Momentous
50. Eloquent
51. Sufficient
52. Candid
53. Avenue
54. Fiscal
55. Afford
56. Infer
57. Conduct
58. Boost
59. Commission
60. Complacent
61. Comparable
62. Surmount
63. Quantitative
64. Indulge
65. Paramount
66. Cultivate
67. Petulant
68. Tentative
69. Assertion
70. Flourish
71. Decree
72. Null
73. Disparage
74. Coarse
75. Innovative
76. Imposing
77. Conventional
78. Aesthetic
79. Antipathy
80. Predecessor
81. Ferocity
82. Artificial
83. Malicious
84. Scrutinize
85. Undermine
86. Prohibit
87. Prescribe
88. Bias
89. Adept
90. Entail
91. Contemplate
92. Coincide
93. Adapt
94. Adversarial
95. Eminent
96. Concede
97. Brawl
98. Dubious
99. Unjust
100. Counterproductive
101. Insatiable
102. Expend
103. Vital
104. Objectivity

105. Doctrine
106. Establish
107. Deplete
108. Quirk
109. Analogous
110. Subordinate
111. Scandalous
112. Confide
113. Spur
114. Agitate
115. Perish
116. Emit
117. Precedent
118. Transparent
119. Brevity
120. Treacherous
121. Corroborate
122. Indiscriminately
123. Tactful
124. Prompt
125. Capture
126. Modest
127. Savvy
128. Advocate
129. Unmitigated
130. Facilitate
131. Basic
132. Deficient
133. Squalid
134. Static
135. Accordingly
136. Frankly
137. Feasibility
138. Warrant
139. Entrenched
140. Ambitious
141. Allow
142. Galvanizing
143. Secrete
144. Hostile
145. Anticipate
146. Demonstrate
147. Unilateral
148. Ubiquitous
149. Sinister
150. Rash
151. Clout
152. Fluctuate
153. Satiated
154. Novel
155. Incite
156. Avid
157. Benevolent
158. Locomotion
159. Subsequently
160. Omnipotent

161. Temperament
162. Qualitative
163. Acquisition
164. Taut
165. Stark
166. Oust
167. Modify
168. Demur
169. Opine
170. Obsolete
171. Foment
172. Impartiality
173. Culmination
174. Articulate
175. Allude
176. Confine
177. Exacerbate
178. Enumerate
179. Renounce
180. Bittersweet
181. Tremendous
182. Lucrative
183. Unprecedented
184. Peculiar
185. Condone
186. Provocative
187. Exploit
188. Unadorned
189. Ambivalence
190. Ignominious
191. Abysmal
192. Conviction
193. Contradict
194. Diminish
195. Pragmatic
196. Undulate
197. Scrupulous
198. Exhilarating
199. Materialistic
200. Abstract
201. Foreseeable
202. Egregious
203. Discord
204. Dismay
205. Sheer
206. Simple
207. Onset
208. Dire
209. Exert
210. Reconsideration
211. Constitute
212. Altercation
213. Dispatch
214. Eccentric
215. Persecute
216. Principle

217.	Fundamental
218.	Envy
219.	Reinforce
220.	Disdain
221.	Ramify
222.	Underscore
223.	Spawn
224.	Austere
225.	Hypothetical
226.	Convey
227.	Complement
228.	Melodramatic
229.	Candor
230.	Reluctantly
231.	Apex
232.	Readily
233.	Ornate
234.	Bolster
235.	Emphatic
236.	Adequate
237.	Subtle
238.	Viability
239.	Irreconcilable
240.	Controversial
241.	Consensus
242.	Devise
243.	Lament
244.	Potent
245.	Invoke
246.	Advent
247.	Vow
248.	Raw
249.	Malleable
250.	Pinnacle
251.	Diversification
252.	Scorn
253.	Repudiate
254.	Urge
255.	Excel
256.	Anomaly
257.	Abate
258.	Unveil
259.	Deference
260.	Reproach
261.	Sentiment
262.	Solidarity

## Appendix G.1.: IRB Approval Memo: Conditional



## MEMO

Institutional Review Board  
Federal Wide Assurance: FWA00009066

Date: November 6, 2018

To: Donna Egan

CC: Dr. E Francine Guastello  
Dr. John Spiridakis  
Dr. Mary Beth Schaefer

Dr. Sandra Reznik  
Acting Chair, Institutional Review Board  
Tel 718-990-2634  
[rezniks@stjohns.edu](mailto:rezniks@stjohns.edu)

Dr. Marie Nitopi  
IRB Coordinator  
Tel 718-990-1440  
[nitopim@stjohns.edu](mailto:nitopim@stjohns.edu)

**Protocol # 1018-116**

**Protocol Title: The Effects of Using Technology to support Academic Vocabulary Acquisition for Secondary Students with Exceptionalities**

After careful consideration, St. John's University's Institutional Review Board met on November 5, 2018 and conditionally approved your project with conditions stated below. Please revise your application and submit the required changes to the IRB. You may not begin this study until these conditions are addressed and submitted to the IRB. Please address the following issues and concerns:

Revise the assent form to be accessible to children and children with special needs

You may begin your protocol as soon as these clarifications and revisions are received. If you have any questions regarding your conditional approval, please do not hesitate to call me, or Marie Nitopi, at 718-990-1440.

## Appendix G.2.: IRB Approval Memo



## MEMO

Institutional Review Board  
Federal Wide Assurance: FWA00009066

Date: December 4, 2018

To: Donna Egan

CC: Dr. E Guastello  
Dr. John Spiridakis  
Dr. Mary Beth Schaefer

Dr. Raymond DiGiuseppe  
Chair, Institutional Review Board  
Tel 718-990-1955  
[diuser@stjohns.edu](mailto:diuser@stjohns.edu)

Dr. Marie Nitopi  
IRB Coordinator  
Tel 718-990-1440  
[nitopim@stjohns.edu](mailto:nitopim@stjohns.edu)

**Protocol # 1018-116**

**Protocol Title: The Effects of Using Technology to Support academic Vocabulary Acquisition for Secondary Students with Exceptionalities**

Please be advised that conditions have been met and your human subjects' protocol has been approved by the IRB. You may begin your study

IRB approval of research projects is valid for **one year** only from the original date of approval. This study expires on **December 3, 2019**. Approval of the continuation of the research is possible on a yearly basis. A new proposal must be submitted upon request for renewal.

You will not be permitted to collect data more than twelve months from the date of approval without an extension granted by the IRB. Mark your calendar today for November 4, 2019. You should submit your request for continuation on that date and no later.

It is imperative that you keep this memo and the email on file where it can easily be accessed. You will need to provide copies of this document when involved in further correspondence with the IRB.

Best wishes for successful pursuit of this research.

## VITA

Name	Donna Marie Egan
Baccalaureate Degree	Bachelor of Science, College of Mount Saint Vincent, Riverdale, N.Y. Major: Communication Arts: Journalism and Film
Date Graduated	May, 1986
Master's Degree	Master of Science, Molloy College, Rockville Centre, N.Y. Major: Education: English and Special Education
Date Graduated	December, 2012
Master's Degree	Master of Science, St. John's University, Jamaica, N.Y. Major: Literacy
Date Graduated	May, 2014