THE EFFECTS OF AN INTERACTIVE VOCABULARY STRATEGY ON TEACHERS' AND STUDENTS' PERCEPTIONS OF WORD LEARNING

by

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ABSTRACT

KENDALL KISER LATHAM. The effects of an interactive strategy on teachers' and students' perceptions of word learning. (*Under direction of DR.KAREN WOOD)*

It is a well established fact that the level and degree of vocabulary knowledge plays an important role in adolescents' literacy development. The purpose of this study was to examine teachers' and students' perceptions and use of an interactive vocabulary strategy, in the form of an interactive word wall, as the focal point of systematic instruction in a vocabulary-rich literacy program. An interactive word wall is an instructional tool for supporting word learning activities in which students explore, evaluate, reflect, and apply word meanings in meaningful contexts (Harmon, Wood, Vintinner, & Willeford, 2009). A sociocultural theory served as the theoretical framework to guide this study. Sociocultural theory emphasizes that knowledge is constructed collaboratively in a social context, which the individual and social world have mutually interrelated roles in the learning development. Based on a qualitative inquiry, a case study design was used to examine teacher and student perceptions, use, and adaptations of the interactive word wall. This study employed interviews, observations, assessments, surveys, knowledge rating scales, and artifact data. This research study was conducted over six weeks during the fall of 2010. Participants included four content area teachers and their students in one urban middle school in the southeastern United States. Each content area (mathematics, science, social studies, and language arts) is represented in this study. Within-case and cross-case analyses were used to analyze the data. The main findings from this study are: (1) Teachers and students viewed the interactive vocabulary strategy as being beneficial in enhancing word learning

in their content area, (2) Student choice is an important factor to consider when planning instructional strategies in content area classrooms, (3) Teacher resistance to vocabulary instruction decreased over time as they adapted the interactive word wall strategy to meet their specific content goals, and (4) Student word knowledge broadened and deepened during the interactive word wall instructional design. Several conclusions and implications are drawn from the findings. Recommendations for future research are also discussed in the final chapter of this study.

DEDICATION

I dedicate my dissertation to all the wonderful students and colleagues I have had the privilege to work with for the past five years. May you continue to defy the odds and fulfill your highest aspirations in life.

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CHAPTER 1: INTRODUCTION

"The integration of language and content should relate language learning, content learning, and the development of thinking, and should aim to find systematic connections among them."
—Bernard A. Mohan (1990, p. 113)

Educational researchers have long acknowledged three critical facts associated with vocabulary and literacy development: (1) There is strong relationship between vocabulary and comprehension (Anderson & Freebody, 1981; Beck, McKeown, & Omanson, 1987; Kame'enui, Dixon, & Carnine, 1987; Mezynski, 1983; Nagy & Herman, 1987); (2) The vocabulary learning task is tremendous (Graves, 2004; Nagy & Anderson, 1984, 1992); and (3) There is a profound difference in the vocabulary among students from different socioeconomic backgrounds (Beck & McKeown, 2007, Hart & Risley,1995).

The established connection between vocabulary and reading comprehension is well-documented (Beck, Perfetti, & McKeown, 1982; Coyne, Simmons, & Kame'enui, 2004; Cunningham & Stanovich, 1998; National Reading Panel Report [NRP], 2000; Stahl & Nagy, 2006). This association has emerged in factor analyses studies (Davis, 1944, 1972; Spearitt, 1972), in correlations between vocabulary and reading comprehension measures (Baker, 1995; Biemiller & Boote, 2006; Farr, 1969; NRP, 2000; Snow, 1998; Stahl & Nagy, 2006), and in readability research (Chall, 1958; Harrison, 1980). Not surprisingly, the more words a student knows, the better their reading comprehension (Boote, 2006; Graves & Fink, 2007). Yet, the vocabulary learning task

students' face as they encounter reading in multiple disciplines can be overwhelming (Graves, 2004). Reading materials read by students over an academic year include well over 100,000 different words (Nagy & Anderson, 1984), and the average child enters school with a small vocabulary. While students learn approximately 3,000 to 4,000 words a year in school (Anderson & Nagy, 1992; Anglin, 1993; Nagy & Anderson, 1984; White, Graves, & Slater, 1990), this is often insufficient to keep up with the new vocabulary encountered within the multiple sources of reading material in classrooms. An additional concern is the profound difference in the incoming vocabulary knowledge among students from different socioeconomic groups. There is substantial evidence that many poor students enter school with smaller vocabularies than their middle-class peers (Becker, 1977; Biemiller, 2001; Hart & Risley, 1995, 1999; NRP, 2000; RAND Reading Study Group, 2002; White et al., 1990).

Vocabulary and Reading Achievement

Vocabulary is critical to a student's ability to develop and improve their knowledge, as well as gain access to meanings of words they read. There are over eight million struggling readers in grades 4-12 (National Center for Education Statistics [NCES], 2003). When students encounter too many unknown words for which they cannot access the contextual and conceptual meanings, comprehension of the text is unlikely to occur (Becker, 1977; Chall, Jacobs, & Baldwin, 1990). The National Assessment of Educational Progress'(NAEP) 2009 *Report Card*, a congressionally mandated assessment project run by the National Center for Educational Statistics (NCES, 2009), revealed that almost two-thirds of fourth grade students could not read for understanding in fourth grade level content area materials. This is commonly referred to

as the “fourth-grade slump” (Chall & Jacobs, 1983), in which the comprehension of written material begins to exceed many children’s vocabulary (Becker, 1977; Chall & Conard, 1991: Chall et al., 1990). In the primary grades, the focus of reading is primarily decoding words and following the plot of simple narrative texts (Dole, Duffy, Roehler, & Pearson, 1991). As students transition from third to fourth grade, they are often challenged by new vocabulary and concepts (Armbruster & Gudbrandsen, 1986). During this time, students progress from Stage Two to Stage Three of Chall’s (1996) Stages of Reading Development, in which students move from learning-to-read to reading-to-learn. Progressing from Stage Two to Stage Three, the texts become more varied, complex, and challenging linguistically and cognitively for students (Chall, 1996). In order to comprehend what is being read, students must possess the necessary prior knowledge to connect what is read and learned, the vocabulary knowledge to understand the concept loaded words, and the metacognitive skills to monitor understanding (Baumann, Kame'enui, & Ash, 2003; Gardner, 2007; Nagy, 2005).

Since the connection between vocabulary and reading comprehension is well-documented (Beck et al., 1982; Coyne, Simmons, & Kame’enui, 2004; Cunningham & Stanovich, 1998; NRP, 2000; Stahl & Nagy, 2006), the lack of progress in reading achievement of middle school students is of significant concern. Far too many adolescents are struggling to read at a proficient level. The most recent NAEP data (2009), reported that only 30 % of eighth graders read at a proficient level, and only three percent of the students read at an advanced level when assessed on reading abilities in the contexts of literary experience, gaining information, and performing a task. Additionally, 27% of eighth-grade students scored below the basic level, which means they do not have

partial mastery of the appropriate grade-level knowledge and skills at the eighth grade level (NCES, 2009).

Even more alarming is the gap between students from different socioeconomic backgrounds. The 2009 NAEP results indicate that 83% of white children in eighth grade are reading at or above the basic level. Conversely, only 59% of Hispanic students and 56% of African-American students scored at the same level (NCES, 2009). Students scoring at the basic level have partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at the eighth grade level. Students scoring below basic levels cannot access the contextual and conceptual meanings and have little chance of comprehending the secondary curricula that includes complex vocabulary.

Although vocabulary research has ebbed and flowed over the years, there has been a recent emphasis on vocabulary as a key component of effective reading instruction. The upcoming fourth edition of the *Handbook of Reading Research* (Kamil, Pearson, Moje, & Afflerbach; in press) contains several chapters devoted to vocabulary research. The third *Handbook of Reading Research* (Blachowicz & Fisher, 2000; Nagy & Scott, 2000) contained two chapters that addressed vocabulary, as well as Farstrup & Samuels' (2008) comprehensive review of vocabulary instruction. Pearson, Hiebert, and Kamil (2007) noted, "After a nearly 15-year absence from center stage, vocabulary has returned to a prominent place in discussions of reading, and it is alive and well in reading instruction and reading research" (p. 282). Furthermore, the National Reading Panel (2000) study highlights the importance of vocabulary knowledge in comprehension by noting that "reading comprehension is a cognitive process…and cannot be understood

without examining the critical role of vocabulary learning and instruction in its development" (p.5-11).

In spite of the NRP's (2000) recent findings, they concluded that the extant vocabulary research knowledge base is insufficient. Fisher and colleagues (in press) indicated that although a comprehensive approach to vocabulary instruction is needed (Kamil & Heibert, 2005; Stahl & Nagy, 2006; Watts-Taffe, Blachowicz & Fisher, 2009), relatively few studies have directly investigated comprehensive approaches. Without further research investigating vocabulary comprehensively, students will continue to struggle with comprehension, especially informational material that contains a large amount of specialized vocabulary.

Statement of the Problem

The educational implications for adolescents with limited vocabulary are profound. Since the strong correlation between comprehension ability and vocabulary knowledge has been established, vocabulary knowledge is vital for academic success (Baker, Simmons, & Kame'enui, 1998; Cunningham & Stanovich, 1998). Vocabulary proficiency is considered to be both a precursor to reading comprehension and an outcome of it (Bromley, 2007). Students who do not have sufficient vocabularies or word-learning strategies continue to struggle throughout their educational careers, which leads to a cycle of frustration and continued failure (Hart & Risley, 2003; Snow, Barnes, Chandler, Goodman, & Hemphill, 2000; White et al., 1990). Furthermore, the vocabulary level of an individual is viewed as a means of unlocking or closing access to information and often illustrates whether a person is considered educated (Beck & McKeown, 2002; Stahl & Nagy, 2006).

The discrepancy in vocabulary knowledge of students from different socioeconomic groups is alarming. There is a wide gap in vocabulary knowledge between economically disadvantaged children that begins in preschool and continues through the school years and is an important link to poor school performance (Becker, 1977; Coyne et al.; Hart & Risley, 1995; Templin, 1957; White, Graves, Brunetti, & Slater, 1982). Children who enter school with limited vocabulary find reading difficult, resist reading, learn fewer words, and fall further behind (Stanovich, 1986). Students with limited vocabularies often graduate high school only knowing one-fourth as many words as their peers (Smith, 1941). Conversely, students with large vocabularies find reading easier, read more widely, and are more successful in school (Lubliner & Smetana, 2005).

Becker (1977) was one of the first researchers to stress the importance of vocabulary development by connecting vocabulary size to the academic achievement of disadvantaged students (Baumann & Kame' enui, 1991). In his findings, he explained that vocabulary deficiencies were the primary cause of academic failure of disadvantaged students in grades three through twelve. He noted that reading comprehension of disadvantaged students in grades three and four resulted primarily from lack of adequate vocabulary knowledge. Almost a decade later, Graves and colleagues (1982) found the usable vocabulary of kindergartners with low-socioeconomic status (SES) was less than half of the higher SES students' vocabulary. In a study conducted by Chall and Jacobs (1983), they found that students from low-income families were on grade level in third grade and experienced a drop in fourth grade due to the increased emphasis on content specific knowledge. Furthermore, Hart and Risley (1995) found that the socioeconomic status of a child's family could account for 42% of the variance in the child's rate of

vocabulary growth and 40% of the variance in their use of vocabulary when they were three years old.

Nagy (2005) suggested a causal connection between vocabulary knowledge and comprehension ability, with the correlations between .6 and .7. The closer the correlation coefficient to -1 or +1, the more closely the variables are related. Since the relationship is seen as reciprocal, students who possess more vocabulary knowledge when they begin school will likely develop the ability to comprehend texts they read. According to Nagy's research findings (2005), as student's comprehension increases, their vocabulary knowledge will increase. Conversely, students who begin school with limited vocabulary knowledge may struggle with reading comprehension, and that struggle will limit their vocabulary growth. Biemiller (2005) found a correlation between vocabulary size and reading comprehension to be around .81. Consistent with these findings, the NRP (2000) identified lack of vocabulary knowledge as a key element to school failure. All of this suggests that vocabulary knowledge impacts reading comprehension throughout students' school experiences.

Further exacerbating the problem as students progress through later elementary and into middle school is the increased emphasis on informational material with specific vocabulary in each content area class. Content area textbooks are explanatory, detailed and full of specialized and technical terms (West, 1978). Therefore, students must possess a specialized vocabulary knowledge to sort through the text (Harmon, Hedrick, Wood, & Gress, 2005; NRP, 2000). Without a strong understanding of key vocabulary within each discipline, students will be unable to comprehend material within specific content areas (Chall & Jacobs, 2003; Kamil, 2003; Manzo, Manzo, & Thomas, 2006;

NRP, 2000). In order for adolescents to be successful in school, they need to be able to comprehend the complexities of the language and the specific vocabulary for each discipline.

Although the relationship between vocabulary and comprehension is well-established, there is often little emphasis on vocabulary development in the school curricula (Beck, McKeown, Kucan, 2002; Biemiller, 2001; Blachowicz & Fisher, 2000; Scott, Jamieson, & Asselin, 1998; Watts, 1995). Durkin (1978-1979) was the first to document that upper elementary teachers spent less than one percent of reading instruction focused on vocabulary. Additionally, Scott and Nagy (1997) found that a mere six percent of school time was devoted to vocabulary, and only 1.4% of school time was devoted to content-area vocabulary. Recently, Scott, Jamieson-Noel and Asselin (2003) studied classroom instructional time devoted to vocabulary instruction in 23 upper level classrooms in Canada. They found that only a minimal amount of time was spent on vocabulary instruction in both language arts classrooms and content area classrooms. Specifically, only 1.4% of school time was spent on supporting vocabulary learning in science, social studies, and mathematics classrooms. In a study conducted by Bailey, Butler, LaFramenta & Ong (2004), they found that in upper elementary science classrooms "students were rarely required to be actively involved in the acquisition of academic vocabulary" (p.88). The vocabulary instruction in these classrooms typically involved what Vacca and Vacca (2006) label as "assigning and telling" with limited emphasis on conceptual understandings, word morphologies, and metacognition. In conjunction with limited classroom instructional time devoted to vocabulary, Walsh

(2003) found that most of the basal programs widely used in classrooms did not provide the necessary attention to vocabulary needed to increase comprehension.

Nagy (1998) explains three problems with traditional methods of vocabulary instruction. First, the definitional approach to vocabulary building leads to a superficial level of word knowledge. Nagy and Herman (1987) explained that dictionary definitions often fail to account for the gaps in children's vocabulary knowledge and cannot include all the necessary information about a word or concept needed to comprehend a text. A second problem with traditional vocabulary lessons is using context to define a word (Nagy, 1998). Using the context method, students are required to determine the meaning of the word based upon sentences surrounding the word. Unfortunately, surrounding sentences do not always contribute enough information to the student to allow the students to derive a meaning for the word (Shatz & Baldwin, 1986). Thirdly, traditional vocabulary teaching often provides only partial knowledge of a word. Superficially teaching vocabulary words may provide the students with an initial awareness of the word, but may not provide the student with the ability to comprehend and apply the vocabulary words in different contexts.

Research devoted to the integration of effective vocabulary instruction in content area reading instruction (Biancarosa & Snow, 2006; Snow, 2002) is lacking. Recently, researchers have called attention to the need for investigating content area vocabulary instruction and its impact on content area comprehension (Baxter & Reddy, 2007; Scammacca, Roberts, Vaughn, Edmonds, Wexler, Reutebuch, & Torgesen, 2007). The RAND Reading Study Group (2002) stressed the need for research on conditions that optimize learning vocabulary and that consider the interaction of text factors with the

reader, activity and sociocultural context. Although there is growing evidence of best practices in vocabulary instruction, little attention has been devoted to developing teacher knowledge of the skills and strategies that promote vocabulary development and comprehension of informational texts (Snow, 2002).

Without basic vocabulary skills, students will continue to struggle to comprehend text, which negatively impacts their opportunities in school and often leads to students dropping out (Alliance for Excellence in Education, 2006). Nearly 1.2 million students fail to graduate from high school on time (Editorial Projects in Education Research Center, 2008). Although students drop out for a variety of reasons, the most commonly cited reason is that students do not have the literacy skills needed to comprehend the secondary curriculum (Kamil, 2003; Snow & Biancarosa, 2003). The connection between vocabulary and reading comprehension, as well as vocabulary and school performance in all content areas, is one of the most strongly established in educational research (Davis, 1944, 1968; NRP, 2000). Therefore, vocabulary instruction in content specific areas is critical to the development of comprehension, as well as overall school performance.

The ability to read and vocabulary knowledge are vital for students' academic success (Baker, Simmons, & Kame'enui, 1998; Cunningham & Stanovich, 1998). The reduced instructional time (Durkin, 1978-79; Rosenshine & Stevens, 1984) and increased textual vocabulary in content area classes (Nagy & Anderson, 1984) play a critical role in the lack of vocabulary development for older learners. As students begin to enter content area classrooms in middle school, they must possess specialized vocabulary knowledge to understand the text (Harmon et al., 2005; NRP, 2000). Vocabulary knowledge is one of the major reasons students have difficulty with the demands of content area textbooks

(Alvermann & Swafford, 1989; Armbruster & Nagy, 1992; Bintz, 1992; Blachowicz & Fisher, 2000; Walpole & McKenna, 2004; Wood, Harmon, & Hedrick, 2004). Without a strong understanding of key vocabulary within each content area, students will be unable to comprehend the material (Chall & Jacobs, 2003; Kamil, 2003; Manzo et al., 2006; NRP, 2000). Thus, there is a need to examine the effects of vocabulary instruction on individual words and instruction that promotes student's ability to learn words on their own (Baumann & Kame' enui, 2004; Carlo, August, & Snow, 2005; Folse, 2004; Graves, 2000; Kamil & Hiebert, 2005; Nagy, 2005; NRP, 2000; Osborn & Lehr, 2003; RAND Reading Study Group, 2002; Stahl, 1998).

Significance of this Study

This study examines teachers' and students' perceptions and use of an interactive vocabulary strategy, the interactive word wall (Harmon, Wood, Hedrick, Vintinner, & Willeford, 2009), as a means of improving middle school students' understanding of the vocabulary in the content areas. It is an important study for several reasons. Since the late 20th century, prevention of reading difficulties in the early grades (pre-k through third) has been the focal point of spending from state and federal agencies (Moje & Tysvaer, 2010). Recent national reports highlighted the need for vocabulary research (NRP, 2000; RAND Reading Study Group, 2002). Specifically, the RAND Reading Study Group (2002) stressed the need for research on conditions that optimize learning vocabulary and that consider the interaction of text factors with the reader, activity, and sociocultural content. Research on vocabulary instruction in the content areas is less established than in reading classrooms. There is little published research specifically devoted to teaching vocabulary in the content areas (Harmon et al., 2005). Moreover, there are fewer

resources for teachers at the middle and high school levels, and those that do exist often focus on vocabulary instruction in the English classroom (Dixon-Krauss, 2001; Dole, Sloan, & Trathen, 1995; Harmon, 1998).Therefore, there is a need to further examine the effects of an instructional vocabulary tool, in the form of an interactive word wall, which incorporates current knowledge of effective vocabulary instruction, as well as content area instruction.

This study will also have the potential to inform and guide secondary content area pedagogy. Educators are searching for instructional approaches to address the gap that exists in vocabulary knowledge between high and low-performing readers. This research has the potential to influence the way vocabulary is taught by providing a strategy that encompasses the components of rich instruction designed to help students deepen and broaden their understanding of word meanings.

Findings from this study will contribute to the corpus of research surrounding content area vocabulary development. Moreover, the greatest potential significance of this research will occur at the local level, with potential to impact the students and the teachers involved in the study.

Sociocultural Lens

This study is grounded in the sociocultural theory of learning and is informed by David Ausbuel's meaningful learning theory. Understanding that literacy is a social practice (Freire, 2000; Gee, 1990; New London Group, 1996; Street, 1984), sociocultural theory provides a framework for examining how literate practices such as vocabulary learning are socially and culturally mediated. This theory draws heavily on the work of scholars such as Rousseau (1762), Dewey (1933), Vygotsky (1978), Lave & Wenger

(1991), and Wertsch (1991). I use this lens in this study to examine how students and teachers use an interactive vocabulary strategy to learn new concepts.

Beginning in the 18th century, Jean Jacques Rousseau's theory emphasized learning by experience. He stressed the importance of children developing ideas for themselves, to make sense of the world in their own way and to draw their own conclusions from their own experiences (Doyle & Smith, 2007). Consistent with Rousseau's theory, John Dewey, a leader of the Progressive Movement during the early 1900s, believed that experiences were the central tenet of learning. Dewey (1938) considered learning a joint task between the learner and the teacher. The teacher is the guide who supports the learner. In summary, the work of the theorists outlined are relevant to the present study and linked to the sociocultural theory because they emphasize the importance of the active and social nature of learning and the need to make connections to one's existing knowledge.

Aligned with previous theorists, Lev Vygotsky's (1978) sociocultural theory of learning states that learning cannot be separated from its social, cultural, historical and linguistic contexts. It conceptualizes that knowledge is constructed collaboratively in a social context, which the individual and social world have mutually interrelated roles in the learning development. The process (the ways the instruction is delivered and the social interactions that contextualize the learning experience) and the content are considered equally important (RAND Reading Study Group, 2002). Moreover, the interaction between individuals, people, and cultural artifacts, all of which contribute to the social formulation of the individual mind (Wertsch, 1991), lead to the awareness of socially valued goals (Daniels, 1996; Engestrom, Miettinen, & Punamaki, 1999; John-Steiner & Mahn, 1996; Rogoff, 1990; Vygotsky, 1978; Whipp, Eckman, & Van de

Kieboom, 2005). Wertsch (1991), a contemporary scholar of Vygotsky's work, emphasizes that mediated action and cultural tools shape cognitive processes. Likewise, sociocultural theorists Lave and Wenger (1991) see learning as being developed through social interactions that are driven by common interests and knowledge, as well as being presented in an authentic context.

A secondary theory that informs this study is David Ausubel's (1968) meaningful learning theory, which is rooted in cognitive learning theory. Ausubel's theory contrasts meaningful learning with rote learning. He explained that rote learning is "discrete and relatively isolated entities that are relatable to cognitive structure only in an arbitrary and verbatim fashion, not permitting the establishment of [meaningful] relationships" (p. 108). Therefore, rote learning has little or no association with one's existing cognitive structure. Conversely, meaningful learning is the process of relating and anchoring new material to relevant established entities in cognitive structure. Learning is also related to experiences with events or objects. This theory is relevant to the present study because the integration of new information with existing knowledge is highlighted.

A sociocultural, as well as a meaningful learning lens, offers important insights into how word learning is influenced by the social environment and prior experiences. The theoretical framework for this study will be further developed in chapter two.

Personal Perspective

In addition to the theoretical framework, it is necessary for a researcher to be aware of his/her history in relation to the context of the study. Kilbourn (2006) explains that one's own personal perspective also informs the research process.

My decision to examine teachers and their students in a majority minority school setting is influenced by the path my educational career has taken the last 25 years. As a child from a middle class home, I attended schools with little diversity among its staff and students. Generally, the community consisted of a primarily homogenous population with two-parent households. There was very little mobility among the families in the community. I believe that I can count on one hand my fellow classmates that were of a different race.

During high school, I began to notice and hear what I believed were racist underpinnings that drove the curricula and instruction in the county. I felt that there was one school in the county in which all the students from lower socioeconomic backgrounds attended. I was able to see first-hand the inequities between that particular school and the rest of the schools in the county due to my participation on school sports teams, as well as select county sports teams. I played on my school's basketball team, and that particular school was part of our conference. Teachers, coaches, and parents would warn us before entering the school to "be careful," "don't touch anything," and "never walk alone." The perception of that particular school was that of gangs, drugs, and chain-linked fences.

I also played select basketball with several girls from that particular school. We would often pick them up at the school to attend practice. The quality of the facilities did

not compare to what I had at my school. I had the best athletic equipment, new uniforms, and a quality facility to practice daily. The other girls had very little equipment to use, old uniforms, and a dilapidated building.

When I graduated from college with a teaching degree, I decided to begin my teaching career in a school with very similar demographics to the schools I attended. From university faculty to family members to life-long educators, I was told where I should and should not teach. I was told that I should teach at one of the suburban schools because "you can count on strong parent support, students with strong test scores and very little behavior issues." I was told that I did not want to begin my teaching career at an urban school because I would not have the resources, parent support or students who come from "good homes." I ended up teaching at the suburban school that emulated my own childhood schooling experiences. During my time at the school, I felt that something was missing. The core of my philosophy is ensuring all students, especially academically at-risk students, succeed in school as well as increase their opportunities for a prosperous life. Thus, I realized that my calling was in an urban school setting.

Five years ago, I decided to work at an urban middle school that faced significant challenges due to extreme poverty, lack of teacher retention and limited resources. Students at great risk academically walk the halls of this school day in and day out with very little motivation to come to school. The students' academic performance reflected the vocabulary and comprehension weaknesses well-documented by the research (Biemiller, 2004; Cunningham & Stanovich, 1998; Hart & Risley, 1995). The highly effective teachers that the students needed most were far and few between. Too often, I saw teachers resort to worksheets, crossword puzzles, and lecture driven instruction

rather than more engaging instruction I saw in my previous school. Over the last five years, our staff has made great strides in students' academic achievement as well as the overall perception of the school. This was done by attracting and sustaining highly-effective teachers and staff members who followed the same vision: ALL students will succeed.

Despite the improvements, too often, I saw my fellow colleagues struggle with how to help their students learn new vocabulary. Several teachers had students simply copy down the words and definitions within a unit of study, and then students would be quizzed on the words later on in the week. Other teachers did not attempt to teach vocabulary because they did not know how to teach it, or they felt that there would be too many words to teach. Since inadequate vocabulary knowledge exacerbates learning difficulties faced by already disadvantaged students, I decided to begin this study devoted to equipping teachers and students with strategies for learning subject specific vocabulary. The major emphasis of this study was to strengthen the vocabularies of all students at the school in which the study was conducted.

Research Purpose and Questions

The National Reading Panel (2000) reported students with strong vocabulary skills performed better on reading comprehension assessments. Research indicates that relying on incidental word learning is an inadequate way to address students' vocabulary development. Nagy and Herman (1987) determined that students have a five percent chance of learning an unfamiliar word while reading. Moreover, Swanborn and DeGlopper (1999) found that high-ability students have a much better chance of learning a new word during independent reading than lower achieving students. With the limited

gains in vocabulary from engagement in independent reading, vocabulary instruction is a critical component to content area instruction. Given that vocabulary knowledge plays an important role in reading comprehension, it is vital that instructional strategies are developed to aid students who have limited vocabularies. Therefore, the purpose of this study was to investigate the effects of an interactive vocabulary strategy, the interactive word wall (Harmon et al., 2009), on teachers' and students' perceptions of word learning. This study is guided by the following questions:

(1) How do specific content area teachers and students perceive interactive word walls as an instructional strategy for enhancing vocabulary learning?

(2) How do specific content area teachers and students use and adapt an interactive vocabulary strategy, the interactive word wall, as a tool for creating a word-rich environment?

(3) What impact does the use of an interactive vocabulary strategy, the interactive word wall, have on student word learning?

I chose to employ a qualitative methodology to examine four content area teachers' and their students' perceptions, use, and adaptations of an interactive vocabulary strategy. According to Merriam (1998), qualitative research is "interested in the process rather than outcomes, in context rather than a specific variable, in discovery rather than confirmation" (p.19). A qualitative methodology enables the researcher to study the complexities of social interaction in-depth and detail (Gall, Gall, & Borg, 2003; Glesne & Peshkin, 1992; Huberman & Miles, 2005; Meloy, 2002; Patton, 1987; Schram, 2003; Shank, 2002). First, teachers' and students' perceptions and use of the interactive word wall wase investigated through interview data, survey data, and Knowledge Rating

Scales (Blachowicz & Fisher, 2006). Then, training was provided for teachers devoted to the use of an interactive word wall as outlined by Harmon and colleagues (2009) (Appendix F). After the training, several instructional lessons were designed around the interactive word wall to support learning in content area classes (i.e., language arts, social studies, science, and mathematics). During the implementation phase, observational data examining the use and adaptation of the interactive vocabulary strategy in each classroom was collected. Teachers also administered three vocabulary quizzes throughout the duration of the study. After the completion of the interactive word wall instructional design, teachers and students were interviewed and surveyed about their perception and use of the interactive word wall. Students also completed a post Knowledge Rating Scale to determine their level of understanding of the words studied.

Definition of Terms

The following section was developed to ensure the reader's understanding of the relevant terms included in this research study. In the literature review, all of the terms will be covered in-depth.

Adolescents

Adolescents is a term derived from the Latin verb *adolesere*, which translates to mean to grow into adulthood (Lerner & Steinberg, 2004, p. 5). The term became widely accepted in the late 19th and early 20th century due to changes in child labor laws and expectations of schooling in the United States and other Western countries (Kett, 1977; Modell & Goodman, 1990; Tyack, 1990). Adolescence is a unique time period between childhood and adulthood (Christenbury, Bomer, & Smagorinsky, 2009). This period of time is characterized by physical, emotional, and intellectual changes (National Middle

School Association, 2003). Contemporary scholarship points to three major transitions that take place during the period of adolescence: biological changes, social changes, and cognitive changes (Steinberg, 2005). However, as Alvermann (2009) explains, adolescents have a true "degree of agency" and expertise that educators can use and foster.

Content Area Literacy

Content area reading first originated in the early 1900s (Moore, Readence, & Rickelman, 1983). At this time, successful content area reading was seen as mastering a set of discrete skills (Draper, 2008). In the 1970s, there was a shift towards the idea that reading was a meaning-making process which focused on reading in psycholinguistic, sociolinguistic, and cognitive terms (O'Brien, Stewart, & Moje, 1995; Jacobs 2008). This moved the emphasis from reading to "literacy" in the 1990s (Jacobs, 2008). Vacca and Vacca (2005) define content area literacy as "the ability to use reading, writing, talking, listening, and viewing to learn subject matter in a given discipline" (p.7). It also involves the ability to read and write about multiple forms of print. These multiple forms of print include textbooks, novels, magazines, Internet material and other sociotechnical sign systems conveying information, emotional content, and ideas to be considered from a critical stance (Bean, Bean, & Bean, 1999).

Vocabulary

The knowledge of specific terms is closely related to background knowledge (Marzano, 2004). Moreover, it is the process of learning a language, specifically words (Beck, McKeown, & Kucan, 2002). Vocabulary can either be expressive or receptive. Expressive vocabulary requires the speaker or writer to produce a specific label for a

specific meaning. A receptive vocabulary requires the reader or listener to link a specific meaning with a given label (Kame'enui, Dixon, & Carnine, 1987). It is important to note that sight words are not included in this study. A sight word is a word that does not require word analysis for identification purposes (Harris & Hodges, 1995).

Content Area Vocabulary

Content area textbooks are explanatory, detailed and full of specialized and technical terms (West, 1978). The vocabulary is typically low frequency, conceptually important, represents complex ideas, and is unfamiliar to students (Hedrick, Harmon, & Wood, 2008). Students must possess a specialized vocabulary knowledge to sort through the text (Harmon, Hedrick, Wood, & Gress, 2005; NICHD, 2000). Without a strong understanding of key vocabulary within each discipline, students will be unable to comprehend material within specific content areas (Chall & Jacobs, 2003; Kamil, 2003)

Interactive Vocabulary Strategy

As used in this study, an interactive vocabulary strategy supports the following goals of vocabulary learning and teaching: what it means to know a word (Beck, McCaslin, & McKeown, 1980; Stahl & Fairbanks, 1986), multiple exposures to words in a variety of contexts (McKeown, Beck, Omanson, & Pople, 1985; Stahl & Fairbanks, 1986), and the notion of associative learning in which one acquires knowledge in varying degrees through associations made with existing knowledge and experiences (Harmon et al., 2009). .

Interactive Word Wall (Harmon, Wood, Hedrick, Vintinner, & Willeford, 2009)

An instructional tool for supporting word learning activities in which students explore, evaluate, reflect, and apply word meanings in meaningful contexts (Harmon et

al., 2009). The word wall is a visible and concrete tool used to facilitate discussions and expand students' use of targeted words (Brabham & Villaume, 2001). The teacher and students select the most significant terms and explain each term using student-friendly talk about the definitions. Students then begin making connections with terms by assigning a color to represent the meaning, a symbol, a context, and an illustration of a situation to further depict the term. All of the connections are written on cards and placed on the class word wall.

Advanced Adolescents

According to the National Assessment of Education Progress (NAEP, 2009), there are three level descriptors of what students should know and be able to do at the eighth grade level: basic, proficient, and advanced levels. The levels are cumulative; therefore, students performing at the advanced level include the competencies associated with the basic and proficient levels. Students performing at the basic level should be able to locate information; identify statements of main idea, theme, or author's purpose; and make simple inferences from texts. They should be able to interpret the meaning of a word as it is used in the text. Students performing at this level should also be able to state judgments and give some support about content and presentation of content. Eighth-grade students performing at the proficient level should be able to provide relevant information and summarize main ideas and themes. They should be able to make and support inferences about a text, connect parts of a text, and analyze text features. Students performing at this level should also be able to fully substantiate judgments about content and presentation of content. Eighth-grade students performing at the advanced level should be able to make connections within and across texts and to explain causal relations. They should be able

to evaluate and justify the strength of supporting evidence and the quality of an author's presentation. Students performing at the Advanced level also should be able to manage the processing demands of analysis and evaluation by stating, explaining, and justifying.

Middle School

The most common configuration is grades 6-8 (Alt & Choy, 2000). In the 1960's, the middle school movement began in response to the junior high school (Eichhorn, 1980).Middle schools are specifically structured to meet young adolescents' developmental needs (McEwin, Dickinson, & Jenkins, 1996). The developmental characteristics include physical, social, emotional, intellectual, and moral domains. The structures in middle schools in place to support adolescent's development include flexible scheduling, advisory programs, and team teaching (National Middle School Association, 2003)

Summary

This study examines teacher and student knowledge and use of an interactive vocabulary strategy. Chapter one has introduced the issues of a limited vocabulary and the multifaceted problems that face adolescents with limited vocabularies. This chapter has established a foundation for this qualitative dissertation. Moreover, the research questions used to guide this study, as well as the significance of the study were presented. My personal and theoretical framework has also been established in chapter one. Chapter two synthesizes the literature related to my study and further develops the theoretical framework used to guide the study. Chapter three explains the research methodology employed in this present study. Chapter four discusses the research findings that emerged from this study. The findings are based on four content area teachers and their student's

experiences with an interactive vocabulary strategy-the interactive word wall. The chapter is discussed in detail through narrative description. Chapter five discusses conclusions and implications of the study's findings as well as recommendations for future research.

CHAPTER 2: REVIEW OF THE LITERATURE

Organization of Literature Review

The purpose of this study was to investigate teachers' and students' perceptions and use of an interactive vocabulary strategy in the form of an interactive word wall in four content area classrooms. This chapter brings into focus research on effective vocabulary instruction and methods to increase depth of content area vocabulary for middle school students. In this chapter, I begin by expanding on the term "vocabulary." I then describe the sociocultural framework used to guide this study, as well as David Ausbel's (1968) meaningful learning theory. Then, five issues surrounding content area vocabulary will be considered. The first section presents the historical perspective of vocabulary instruction. In the second section, an exploration of vocabulary development is addressed. The third section includes the research base surrounding effective vocabulary instruction that supports the development of higher-level vocabularies. The fourth area of research considers the specific features and instructional techniques in content area vocabulary learning. The fifth section examines content area teacher beliefs regarding literacy in subject areas. This chapter concludes with a rationale for supporting vocabulary strategy instruction as part of a content area classroom.

Using a common set of keywords, searches were performed in three electronic databases: *ERIC, PsycINFO,* and *UMI ProQuest Digital Dissertations.* The electronic database searches were supplemented with a review of articles cited in recent meta-

analyses and narrative syntheses of research on vocabulary instruction and learning. The terms *vocabulary instruction, content area vocabulary, subject area vocabulary and learning, teacher perspectives and vocabulary, vocabulary learning,* and *content area teacher beliefs* were used to search the literature. Research literature was selected based on the validity of each research study. While there is a wealth of research devoted to students' cognitive development, this is beyond the scope of the present study. This study focused on vocabulary instruction and learning in four specific content areas- language arts, social studies, science, and mathematics. It should be noted that there have been few studies related to effective strategies for vocabulary growth in middle school.

Vocabulary

It is important to begin this chapter defining the term *vocabulary*. Vocabulary "is the knowledge of meaning of words" (Kamil & Heibert, 2005). Words come in two forms- oral and print. Oral vocabulary refers to words that are spoken or read orally. Print vocabulary refers to words that a reader understands or knows when they are reading or writing (Beck, McKeown, & Kucan, 2008). Print vocabulary is more difficult to attain because it requires quick, accurate, and automatic recognition of the written word. The knowledge of words also comes in at least two forms- receptive and productive. Receptive vocabulary is the set of words for which one can assign meanings when listening or reading. Receptive vocabulary is usually more extensive than productive vocabulary and is critical to establishing strong oral vocabulary skills for beginning readers. As a child begins to read, unless the word they are reading is in their receptive vocabulary, they will not comprehend the word. Productive vocabulary is the set of

words that an individual can use when writing or speaking. They are words that are well-known and used frequently (Kamil & Hiebert, 2005).

Theoretical Framework

This study is theoretically grounded in the sociocultural theory of learning. In this paradigm, researchers emphasize that learning is socially situated and a mediated process happening first on the interpersonal level and then on the intrapersonal level (Vygotsky, 1978). This will be discussed further in the forthcoming paragraphs. Moreover, sociocultural researchers assert that language and learning take place through social interaction (Lantolf, 2000; Lantolf & Appel, 1994; Mitchell & Myles, 1998; Myles, 2002).

Sociocultural theory is rooted in the work of Lev Vygotsky, a Soviet psychologist of the early 20th century. Vygotsky theorized that students learn through social interaction and culture, with language being the primary medium to learning. Furthermore, he viewed school as a "unique form of cooperation between the child and the adult that is the central element of the educational process," and this interactional process recognizes that "knowledge is transferred to the child in a definite system" (Vygotsky, 1978, p. 169).

A sociocultural perspective emphasizes the interdependence between the individual and social processes in the construction of knowledge. Unlike other psychological perspectives that focus on human cognition and behavior of the individual, a sociocultural theory locates the fundamental unit of analysis for examination of human behavior as activity, or cultural practices (Nair & Hand, 2006). A sociocultural concept affords an understanding of the relationship among the individual, the mind and the social

in development. For the purposes of this study, three core principles of sociocultural theory will be discussed in-depth:

(1) Development occurs on multiple levels simultaneously (Vygotsky, 1987).

(2) Tools and artifacts influence learning and development and are mediators of psychological process (Wertsch & Tulviste, 1996).

(3) Social others and social interactional processes play an important role in learning and development , and learning is constituted by changing relations in these social relationships and the social world. (Nasir & Hand, 2006).

Development occurs simultaneously on multiple levels. Vygotsky (1987) explained the mutual relationship between the individual and society encompasses four planes of development: microgenetic development, ontogentic development, sociohistorical development, and evolutionary development. The microgenetic development changes during the course of the activity, while the ontogenetic changes over the life course. Sociohistorical development includes changes in social structures and cultural norms. The evolutionary change occurs as humans adapt to its evolutionary context. These multiple levels of development mutually inform one another (Coles, 1996). Rogoff (1995), a contemporary socioculturist, further elaborated on the multiple levels of development by distinguishing activity at different levels. She explains three planes- participatory appropriation, guided participation, and apprenticeship. These three levels correspond to three aspects of social interaction- personal, interpersonal, and community/institutional (Rogoff, 1995). The personal plane includes individual cognition, emotion, behavior, values and beliefs. The interpersonal includes roles performances, dialogue, cooperation, conflict, assistance, and interaction with important

social others. The community/institutional planes incorporate shared history, languages, rules, values, beliefs and identities. All processes influence and mediate each other. Multiple levels of analysis conceptualize complex social and cultural processes and spaces. For the purposes of this study, the teaching and learning interactions between the individual, teacher/student and students working within group settings were examined.

Another principle in sociocultural theory concentrates on the tools and artifacts that people encounter are important to learning and development (Wertsch & Tulviste, 1996). Examples of tools and signs include: "language; various systems of counting; mnemonic techniques; algebraic symbol systems; works of art; writing; schemes, diagrams, maps and mechanical drawings; all sorts of conventional signs and so on" (Vygotsky, 1981, p. 137). Human activity can only be understood when the “technical tools” and “psychological tools” or “signs” that mediate this activity are taken into consideration (Wertsch, 1985). The most prevalent “psychological tool” is language in all forms (Vygotsky, 1981).

Wertsch (1991, 1998) explains that meditational means, or cultural tools, is a process by which individuals and their cultural tools interact through goal-directed action. An important component of mediation, described by Wertsch and Tulviste (1996), is that the “mind extends beyond the skin” and the “mind is no longer to be located entirely inside the head” (Cole & Wertsch, 1996). According to Bodorova and Leong (1996), cultural tools begin externally, and they are shared among people on the interpsychological plane. These tools are used to assist or extend our cognitive functioning. Eventually, external tools become internalized and transformed into psychological tools that become part of who we are. Therefore, tools help mediate social

and individual functioning (Wertsch & Stone, 1985). In the present study, I will investigate how participating teachers' and their students' experiences are mediated by various factors of context, by their interaction with each other, by the language in the classroom, and the artifacts used.

The final principle is the importance of social others in the development and learning process. Learning and development happen first on the interpsychological plane (among or between people) and then on the intrapsychological plan (within the individual) (Vygotsky, 1981). Vygotsky considered the social environment a critical component for learning and believed the social interactions transformed learning experiences. McLaughlin & McLeod (1996) added, "From a sociocultural perspective, schooling is a socially constructed process where meaning is negotiated through interaction" (p. 1). Vygotsky (1979) explained that "an essential feature of learning is that it creates the zone of proximal development; that is, learning awakens a variety of developmental processes that are able to operate only when the child is interacting with people in his environment and cooperation with his peers" (p.90). The Zone of Proximal Development (ZPD) establishes what the learner can do alone and what the learner can do in collaboration with a teacher or peers. Collaboration provides an opportunity for the learner to reach their potential performance level within their ZPD.

As learning occurs, students create new identities for themselves within that context (Lave & Wenger, 1991), which may involve repeated engagements and experiences within practices and activities with more competent members of the group (Hall, 1993). Activities, tasks, functions, and understandings do not exist in isolation; they are part of broader systems of relations in which they have meaning (Lave &

Wagner, 1991). Over time, students take on increasing responsibility for their own learning and participation in joint activities (Lave & Wenger, 1991). As Vygotsky stated (1981), "the intellectual abilities that make us uniquely human are a copy from social interaction; all higher mental functions are internalized social relationships" (p.164). These ideas give rise to the concept of scaffolding (Bliss, Askew, & McRae, 1996; Benson, 1997; Wood, Bruner, & Ross, 1976), which explains the process by which assistance from social others can increase one's level of performance and understanding.

The notion of learning occurring first on a social level and then on the individual level has multiple implications for this study. In this study, there were multiple contexts in which the social others (students) played an important role in the vocabulary development and learning outcomes of individual students. There were multiple contexts in which social others (students)increased one's level of performance and understanding: whole class based activities with the teacher and students and student group activities. The structure of whole class activities and small student groups promoted the social aspects of learning through language and talk.

Using a sociocultural lens for this study offers important insights on how learning is influenced by the social environment. Vocabulary instruction and learning as a sociocultural process challenges the traditional and prescriptive approach to teaching and learning. Unlike the traditional approach to vocabulary learning in which the teacher is the authority and students are passive learners, a sociocultural approach employs collaboration to engage in the process of co-constructing knowledge. The knowledge, skills and information needed for learning will be appropriated through guided participation in shared activity (Alfred, 2002; John-Steiner & Mahn, 1996; Putnam &

Borko, 2000; Rogoff, 1990; Whipp, Eckman, & van den Kieboom, 2005). In this study, students are active participants in their learning by being actively engaged with the interactive word wall in order to complete individual, small group, and whole class activities to support word learning.

A secondary theory that guides this study is David Ausbuel's (1968) meaningful learning theory. Meaningful learning is the process of relating and anchoring new material to relevant established entities in cognitive structure. Learning is also related to experiences with events or objects. This theory is relevant to this present study because the integration of new information with existing knowledge is highlighted, as well as providing meaningful learning experiences for the learner.

Historical Development of Vocabulary

Vocabulary is touted as one of the oldest areas of literacy research (Alexander & Fox, 2004). As far back as 1924, researchers noted that growth in reading means continuous growth in vocabulary. Vocabulary studies were stimulated by E. L. Thorndike's *The Teachers Word Book* (1921), in which efforts were made to organize the English vernacular into categories by frequency of occurrence in the English language. During the early part of the 20th century, much of the research was related to developmental growth as it related to vocabulary size (Biemiller, 2003; Nagy & Herman, 1987) and identification of useful words in order to establish a mastery list for each grade level (Beck & McKeown, 1991). Dictionary use, the most frequent independent learning task of the time, resulted in limited word learning (Blachowicz, Fisher, Guastasfeste, & Wolerich, 1990; Miller & Gildea, 1985).

Prior to the 1970s, vocabulary instruction in classrooms was rarely informed by research (Dale, Razik, & Petty, 1973; Petty, Herold, & Stohl, 1967). In 1977, Becker published a seminal article that attributed inadequate vocabulary knowledge to the school failure of disadvantaged children. Furthermore, prior to the 1990's, researchers focused on developmental growth as it related to vocabulary size (Biemiller, 2003; Nagy & Herman, 1987) and identification of useful words for the purpose of establishing a mastery word list for each grade (Beck & McKeown, 1991). Most of the vocabulary learning was informed by behaviorist psychology, in which programs focused on isolated words in decontextualized settings (Dale et al., 1973; Petty, Herold, & Stohl, 1967).

Cognitive learning principles began to drive vocabulary instruction during the 1980s and 1990s. The cognitive emphasis places vocabulary within the more generalized comprehension development (Anderson & Nagy, 1991; Beck & McKeown, 1991; Blachowicz, 1985; Johnson & Pearson, 1984; Mezynski, 1983). Cognitive comprehension theory is aligned to a general problem solving model in which students attack unknown words by generating questions and predictions using the clues the author provides, and using prior knowledge and reasoning principles (Blachowicz, 1991). During the 1990s, the research field began to move towards studying vocabulary instruction (Beck & McKeown, 1991, Fukknik & de Glopper, 1998; Kuhn & Stahl, 1998). Beginning in 1990, Paul Nation's publication of *Teaching and Learning Vocabulary* provided an extensive review of the vocabulary research, as well as classroom applications to vocabulary teaching. Although there has been some recent emphasis on vocabulary instruction, Beck and McKeown (1991) concluded that there has not been an identification of a single best method of vocabulary instruction.

The National Reading Panel' (2000) synthesis of vocabulary research explained, "Dependence on a single vocabulary instruction method will not result in optimal learning" (p. 4). Yaworski and Ibrahim (2001) further emphasized that while no single method has proven reliably superior, any method is superior to no instruction, and students benefit from varied and multiple exposures to a word. Therefore, the research clearly synthesizes the importance of rich, multifaceted vocabulary instruction.

Vocabulary Development

The following section highlights issues related to depth of word knowledge, vocabulary size differences, vocabulary growth, and factors that relate to individual differences in vocabulary development are emphasized.

Depth of word knowledge

Research that addresses what it means to know a word and what mental processes are involved to learn a word are investigated. Several researchers have identified the varying levels of knowing a word. Beck, McKeown, and Kucan (2002) list five levels: "no knowledge; general sense; narrow, context-bound knowledge; having knowledge of word but not being able to recall it readily enough to apply to appropriate situations; and rich, decontextualized knowledge of a word's meaning, its relationship to other words, and its extension to metaphorical uses, such as understanding what someone is doing when they are devouring a book" (p.10). Moreover, Baumann and Kame' enui (1991) discussed three levels of word knowledge that can be used to consider depth of word knowledge: association, comprehension, and generation. Associative knowledge is characterized by the ability to link a new word within specific definition or a single context. Comprehension knowledge is when a student can either demonstrate a broad

understanding of a word in a sentence or be able to use definitional information to find an antonym, classify words into categories, and so forth. Finally, generative knowledge is demonstrated by the ability to produce a novel response to a word, such as an original sentence, or a restatement of the definition in the student's own words. Although reading researchers offer different categories for knowing a word, they all agree that word knowledge is a matter of degree. Therefore, it is important to understand that word knowledge is an intricate and imprecisely defined concept (Baumann et al., 2003; Nagy & Scott, 2000).

Vocabulary Size

Previous research has resulted in widely varying estimates of children's vocabulary size (Anderson & Freebody, 1981; Beck & McKeown. 1991; Graves, 1986; Lorge & Chall, 1963; Nagy & Anderson, 1984; Nagy &: Herman, 1987; Seashore Eckerson, 1940; Wysocki & Jenkins, 1987). Graves (1986) reported that studies prior to 1960 resulted in estimates ranging from 2,500 to 26,000 words for typical first-grade students, and from 19,000 to 200,000 words for university graduate students. Methodological procedures used prior to 1960 lacked specifics regarding: (a) differences between words and word families; (b) definitions of word knowledge; and (c) the source used to represent English vocabulary (Beck & McKeown, 1991). As researchers began to specify parameters of vocabulary knowledge, more accurate estimates were created. For instance, Nagy and Anderson (1984) examined textbooks, workbooks, novels, magazines and encyclopedias used in the classroom to estimate the number of printed words used in English materials in grades three through nine. Their estimate of 88, 533 word families is used as the realm of words that students in grades three through nine can be expected to

know. Beck and McKeown (1991) also provided an estimated that the vocabulary size for five to six-year olds was between 2,500 to 5,000 words and from 19,000 to 200,000 words for college graduate students.

The differences in vocabulary size of children pose a significant challenge in school. Graves, Brunetti, and Slater (1982) described a study on differences in the reading vocabularies of middle and low socioeconomic first graders. The disadvantaged students knew 1,800 words and the middle-class students knew approximately 2,700 words in a domain of 5,044 words. In a domain of 19,050 words, Graves and Slater (1987) reported that disadvantaged first graders knew about 2,900 words and middle-class first graders approximately 5,800 words. Moreover, White et al. (1990) investigated the reading vocabulary in two low-socioeconomic schools and one middle-socioeconomic school. The vocabulary size of students in the two low-socioeconomic schools was about 2, 500 to 3,500 words compared to 4,800 words in the middle-socioeconomic school. Moreover, students vocabularies in the low-socioeconomic schools increased by about 3,500 words per year whereas students in the middle-socioeconomic school increased by about 5,200 words per year. The students who already know most of the words they are exposed to will be able to comprehend more, as well as use that understanding to acquire new knowledge and the vocabulary associated with that knowledge (Spencer & Guillaume, 2006).

Vocabulary Growth

Estimates of vocabulary growth have also varied widely. For example, early research estimated that students learned as few as 1,000 words to as many as 7,300 new words per year (Beck & McKeown, 1991). Currently, there is a growing consensus that

vocabulary is acquired at an average rate of 3,000 words a year, or eight words per day during the school years (Beck, McKeown, 1991; Jones, Smith, & Landau, 1991; Miller. 1977, 1978, 1981, 1986a. 1986b, 1988. 1991; Miller & Gildea, 1987; Marcus, Ullman, Pinker, Hollander, Rosen, & Xu, 1992; Nagy & Anderson, 1984; Nagy & Herman, 1987; White, Power, & White, 1989; Wysocki & Jenkins, 1987). The rate of vocabulary growth varies widely among individuals (Beck & McKeown, 1991; Graves, 1986; Miller & Gildea, 1987; Nagy & Herman, 1987; Smith, 1941; Templin. 1957).

Vocabulary Instruction

Vocabulary instruction traditionally consists of minimal instruction in the classrooms. Researchers have found that instruction usually consists of an instructional context approach (Herman & Dole, 2005) or a definitional approach (Ogle & Blachowicz, 2002). Teachers using the instructional context approach use sentences found in the teacher's edition of their reading programs to introduce vocabulary before students read the assigned story. Typically, students are either told what the word means or asked to try to figure out the meaning of the word from the context. An underlying assumption of the approach is that students have some prior knowledge associated to the topic of text in which an unknown word is embedded. If students do not possess the prior knowledge, they will not benefit from this method (Herman & Dole, 1988).

The definitional approach requires that students learn definition of words by drill or by looking words up in a glossary or dictionary (Petty, Herold, & Stohl, 1968). There are several limitations to this approach. Teaching students only definitions of difficult words before they read a selection has improved the comprehension of that selection in some studies (Kame' enui, Carnine, & Freschi, 1982) but not in others (Ahlfors, 1979;

Tuinman & Brady, 1974). Moreover, the relation between the to-be learned word and the concept it represents may pose difficulty (Graves, 1984; Jenkins & Dixon, 1983). If a word represents a more complex and little understood concept, most students fail to understand the word because they do not understand the underlying concept, nor do they know how it is like and unlike other related words or concepts (Graves, 1984; Herman & Dole, 1988). Using the definitional approach also depends on how much knowledge readers need to have about a word in relation to a particular reading task (Mezynski, 1983).

As previously stated, content area textbooks are explanatory, detailed and full of specialized and technical terms (West, 1978). The vocabulary typically consists of low frequency words that appear in specific content-specific contexts (Hedrick et al., 2008; NICHD, 2000). Lemke (1998) explains that students need to acquire specific languages, vocabulary, and representational practices of a discipline in order to master the specific subject area. Without a strong understanding of key vocabulary within each discipline, students will be unable to comprehend and master the material within specific subject areas (Chall & Jacobs, 2003; Kamil, 2003; Manzo, Manzo, & Thomas, 2006; NICHD, 2000). Therefore, more than the definitional approach is needed to learn words in content area classrooms.

In the content areas, new words and concepts are central to instruction. Therefore, students need to learn specific meanings to understand the terms when they hear and read them, to use them correctly in both oral and written communication, and to remember them over time (Blachowicz & Fisher, 2000) Students need more active, intense instruction in word meanings, as well as multiple exposures to words in different contexts

and approaches to build background knowledge in the domains in which the vocabulary is likely to occur.

Given that vocabulary has been recognized as a strong determinant of reading success (Biemiller, 2003), this study is also guided by content area vocabulary instruction and learning theories. Content area vocabulary instruction includes the features of effective vocabulary instruction for general words, as well as the specific nature of content vocabulary. The National Institute of Child Health and Human Development (NICHD, 2000) recognized the importance of vocabulary development and instruction (Richek, 2005). Moreover, the NRP (2000) report identified five important findings related to vocabulary: (1) Vocabulary should be taught both directly and indirectly, (2) Repetition and multiple exposures to vocabulary items are important, (3) Learning in rich contexts is valuable for vocabulary learning, (4) How vocabulary is assessed and evaluated can have different effects on instruction, and (5) Dependence on a single strategy will not result in optimal learning.

Furthermore, current research on effective vocabulary instruction posits the following aspects: includes rich, multiple, and varied exposure to new words; emphasizes the importance of intentionally teaching selected words; provides explicit instruction in word-learning strategies in ways that give students the ability to learn new words independently; and creates and environment that fosters “word consciousness” (Baumann & Kame’enui, 2004; Beck, McKeown, & Kucan, 2002; Blachowicz & Fisher, 2004, 2006; Graves & Watts-Taffe, 2002; Graves, 2006; Kamil & Hiebert, 2005; McKeown & Beck, 2004; Scott & Nagy, 2004; Stahl & Nagy, 2006;Templeton, 2004).

Rich Instruction

Rich vocabulary instruction has been shown to promote students' comprehension and use of words beyond simple tasks (Beck et al.1982; McKeown, Beck, Omanson, & Pople, 1985; Mezynski, 1983; Stahl & Fairbanks, 1986). Rich instruction includes explaining word meanings in student-friendly language, providing multiple examples and multiple contexts, and processing words deeply by identifying and explaining appropriate and inappropriate uses and situations. According to McKeown and colleagues (1985), multiple opportunities include at least twelve or more encounters with the words to impact comprehension. Multiple exposures to words include games, repeated readings, and discussions (Baumann et al., 2003; Baumann & Kame'enui, 2003; Beck, McKeown, & Kucan, 2002; Bryant et al., 2003; Harmon et al., 2005; Jitendra, Edwards, Sacks, & Jacobson., 2004; NRP, 2000; Stahl & Fairbanks, 1986; Swanborn & de Glopper, 1999) Moreover, students must be exposed to the meaningful use of the word needed to perform a specific task. This is when the students move beyond the definitional level and begin thinking about the use of words in meaningful contexts to produce deeper understanding of the words (Beck, McClaslin, & McKeown, 1980). Furthermore, it focuses on the comprehension of the concept and not on word knowledge alone (Harmon et al., 2009). This includes engaging in active thinking about word meanings, how they might use the words in different situations, and about the relationships among words (McKeown & Beck, 2002).

Associative Learning

Another component of rich vocabulary instruction underlying this study is associative learning- the idea of acquiring knowledge in varying degrees through

associations made with our own existing knowledge and experiences (Harmon et al., 2009). Roe, Smith, and Burns (2005) recommend that students be taught to relate words to others they know in their schemata, construct their own definitions, use drama to define words, identify synonyms and examples of word meanings, and illustrate the vocabulary words. Moreover, Roe and colleagues (2005) highlighted the importance of presenting visual images with the words and having students create their own visual images for new words.

The keyword method (Blachowicz & Fisher, 2000; Kamil & Heibert, 2005; Pressley, Levin, & McDaniel, 1987) is a well-researched strategy used to promote associative learning. The keyword method entails associating phonetic and visual imagery components of a word and its definition (Atkinson & Raugh, 1975). It has been shown to be effective for learning a variety of vocabulary item types (Levin, 1985) and across many diverse populations of learners that include normal achieving students (Levin et al., 1984; Levin, McCormick, Miller, Berry & Pressley, 1982; Pressley, Ross, Levin, & Ghatala, 1984). Mastropieri and colleagues (1990) taught 25 learning disabled students eight abstract and eight concrete words using either the keyword method or a rehearsal method. The rehearsal method consisted of using drill and practice, rapid-paced questioning, and corrective feedback. The keyword method was more successful, and it was just as successful in teaching abstract words in comparison with concrete words. Condus, Marshall, and Miller (1986) studied the effectiveness of teaching the keyword method, picture context, and sentence-experiences to a group of learning disabled poor readers. Over a period of five weeks, students were taught 50 words three days a week for 10 to 20 minute training periods. Results indicated that the students in the keyword group

outperformed students in all other groups. After eight weeks, the keyword group's mean score was nearly twice the mean of the lowest experimental group (sentence experience) and more than three times greater than the control group. The results of these studies indicate that the keyword method can be an effective tool in promoting vocabulary learning.

Teaching specific words

The importance of explicit vocabulary instruction of key vocabulary in enhancing students' acquisition of word meanings has been well documented (Baumann et al., 2003; Fukkink & de Glopper, 1998; Harmon et al., 2005; Jitendra et al., 2004; & NRP, 2000). Marzano, Pickering, and Pollock (2001) explained that "direct vocabulary instruction works and direct instruction on words that are critical to new content produces the most powerful learning" (p.126). Students, especially below level students, benefit from direct instruction of words. Stahl and Fairbanks (1986) found that achievement increased by 33 percentile points when students received explicit instruction of specific words.

Explicit instruction involves directly teaching the meaning of words that are important for understanding the text, and the words that students will encounter often (Stahl, 1986). Stahl (1999) has suggested that teachers provide definitional, contextual and usage information when explicitly teaching words. The National Reading Panel (2000) identified two aspects devoted to the direct teaching of specific words: contextually driven strategies and socially mediated strategies. Context driven strategies includes explicit instruction and strategy focused on contextual and morphemic analysis. Socially mediated strategies are forms of multi-media instruction that include semantic mapping and other similar strategies. Semantic mapping is a categorization process that

arranges words related to a core concept into meaningful clusters (Johnson & Pearson, 1984). Johnson, Toms-Bronowski, and Pittleman (1981) described that intermediate students who were taught target words using semantic mapping and semantic feature analysis procedures outperformed students who learned words through contextual analysis. Hagen (1980) used semantic mapping as a prereading strategy with fourth- and fifth grade students. She found that semantic mapping increased vocabulary knowledge and comprehension, as well as served as diagnostic tool for assessing prior knowledge.

Direct instruction of target words has shown to be more effective when it is aligned to principles of instructional and curricular design (Kame'enui, Carnine, Dixon, Simmons, & Coyne, 2002). This includes direct presentation of word meanings, as well as extensive teacher modeling of new vocabulary in multiple contexts. It also provides the opportunity for students to review and practice the target words in order to begin to incorporate them into their lexicon (Baker et al., 1998).

Explicit instruction devoted to word-learning strategies

Another component of effective vocabulary instruction is explicit word-learning strategy instruction, so that students will have the skills necessary to acquire the meanings of a multitude of words. Previous research indicates contextual analysis, morphology, and using reference books facilitate vocabulary learning (Blachowicz & Fisher, 1996; Graves, Juel, & Graves, 2001; Ruddell, 2001). Contextual analysis is used to decipher the meaning of a word by scrutinizing the semantic and syntactic cues present in the preceding and following words, phrases and sentences (Baumann et al., 2003). A study conducted by Baumann and colleagues (2003) found that when middle school students were taught to identify and use words, phrases, sentences, illustrations, and

typographic features, they were then able to use this information to decipher the meanings of unknown words. Research indicates context clues instruction involves planning, explicit instruction, practice and feedback, scaffolding, and a metacognitive focus (Baumann, Edwards, Font, Tereshinski, Kame'enui & Olejnik, 2002; Blachowicz & Fisher, 2005; Buikema & Graves, 1993; Kuhn & Stahl, 1998). Kuhn and Stahl (1998) pinpointed 14 studies in which students who had been taught external semantic context clues were far better at figuring out the meaning of words when compared to students who received no instruction.

Although not all instruction in using context clues has been successful (Baumann et al., 2003), there have been notables successes. Carney, Kame'enui, and Coyle (1984) taught fifth grades students synonym clues and contrast clues during three 30-minute sessions. Results indicated that the students who received instruction outperformed students in a practice-only group and students in an uninstructed control group in determining the meaning of untaught new words. Two studies by Baumann and colleagues (2002 and 2003) taught contextual analysis and morphological analysis. In the 2002 study, fifth graders were assigned to either a morphemic-only group, a context-only group, a combined morphemic-context group, or an uninstructed control group. Instruction consisted of twelve 50-minute lessons, which included explicit instruction, gradual release of responsibility, and declarative, procedural, and conditional knowledge about the strategy they were learning. Results indicated that students in both the contextual groups and the morphemic group were able determine the meanings of transfer words on an immediate test, but not on a delayed test.

In the 2003 study, fifth grade students were given a combined contextual and morphological analysis treatment within the context of their social studies lessons. Their learning was compared to students receiving instruction in a traditional format. Results indicated that students in the experimental treatment were more adept at inferring the meanings of novel affixed words and at inferring the meanings of morphologically and contextually decipherable words on a delayed test but not on an immediate test.

Although some research has shown using context is beneficial in developing vocabulary, context does not always reveal meaning (Baldwin & Schatz, 1985; Schatz & Baldwin, 1986). Using the contextual approach alone will unlikely provide students with enough information to affect comprehension. Only well-planned, powerful, and relatively lengthy instruction will likely prove effective (Carnine et al., 1984; Jenkins, Stein, & Wysocki., 1984; Beck & McKeown, 1991; Fukkink & de Glopper, 1998; Baumann, Font, Edwards, & Boland, 2005). Furthermore, research has shown that lower-ability readers often do not know how to go about using text information to reason about the meanings of words (McKeown, 1985; Nagy & Herman, 1987; van Daalen-Kapteijns & Elshout-Mohr, 1981).

Another research based word attack strategy is teaching morphology. Morphological knowledge is using word parts to unlock the meaning of unknown words (Blachowicz & Fisher, 1996; Deighton, 1959). Baumann and colleagues (2003) concurred that morphemic analysis, also called structural analysis, is important. Morphological awareness greatly impacts students' ability to understand unknown words. This awareness refers to students' understanding of the structure of words as combinations of meaningful units, or morphemes. Students who understand words at the

morphemic level are able to get meaning of words and are better prepared to deal with increased demands in reading and writing across the content areas (National Institute for Literacy, 2008). Nagy and Anderson (1984) estimated that approximately 60% of the new words a student encounters in reading are analyzable into parts that give support in figuring out the meaning of an unknown word. Knowing prefixes, suffixes, and roots can enable students to guess the meaning of unknown vocabulary. Graves and Hammond (1980) validated procedures for teaching prefixes, and White, Sowell, and Yangihara (1989) confirmed teaching prefixes and suffixes to attack unknown words. Anglin (1993) investigated the contribution made by different morphologically defined word types and by knowledge of morphology and word formation to total recognition vocabulary in early and late elementary school years. Ninety-six children from grades one, three and five participated in the study. Children's root word knowledge increased from first to fifth grade by almost 4,000 words. During the same time, the number of derived words known by students increased by 14,000 words. The majority of this increase reflects morphological problem solving.

Developing word consciousness

Numerous vocabulary researchers and theorists (Anderson & Nagy, 1992; Beck et al., 2002; Blachowicz & Fisher, 2004; Graves & Watts-Taffe, 2002; Kame'enui & Baumann, 2004; Nagy, 2005; Scott & Nagy, 2004) support word consciousness as a necessary component of effective vocabulary instruction. The term refers to an awareness and interest in words and their meanings (Anderson & Nagy, 1992; Graves & Watts-Taffe, 2002).Given that students must learn close to 40,000 words by the time they graduate high school (Stahl & Nagy, 2006), creating an interest and excitement for words

is important in developing students as word learners. Stahl and Nagy (2006) outline several components of word consciousness: “a feel for how written language works; . . . sensitivity to syntax; . . . awareness of word parts; . . . and in-depth knowledge of specific words” (pp. 140-141). Moreover, Anderson and Nagy (1992) explained that word consciousness involves both cognitive and an affective stance towards words. Students who are word conscious are aware of the appreciation of words, an understanding of why certain words are used over others, knowledge about the differences between spoken and written language, and an understanding of the words that could be used in place of other words (Scott & Nagy, 2004). Four main approaches to fostering word consciousness are explained in the following sections.

First, modeling adept diction, recognizing skillful diction in texts, and constantly encouraging students to employ adept diction are starting points to building word consciousness (Graves & Watts-Taffe, 2007). One way to model, recognize, and encourage adept diction is using the word-of-the-day approach. Providing time each day to examine a new word can be effective in encouraging adept diction. Scott and colleagues (1996) studied vocabulary as a vehicle for connecting reading and writing. Working in literature discussion groups, one student was assigned the role of a word hunter, whose job it is to look for and lead a discussion around interesting uses of language in the literature read by the group.

Secondly, word play can foster word consciousness (Graves & Watts-Taffe, 2007). Blachowicz and Fisher (2004) noted that word play calls on students to reflect metacognitively on words, word parts, and context; word play requires that students be active learners; and word play develops domains of word meaning and relatedness as it

engages students in practicing and rehearsing words. Teaching students about homophones, homonyms, idioms, clichés, and puns can stimulate the opportunity for investigating language.

Thirdly, involving students in original investigations centered on vocabulary provide a wealth of opportunities for increasing word consciousness (Graves & Taffe, 2007). Students investigate particular words used in or across texts by critiquing the level of language, word choice, number of high-frequency words, and how the level of the text affected their reading. Investigations include focusing on words found in multiple forms of text and speech. Class discussions are then centered on the commonalties and differences that exist in words.

Finally, word consciousness can be fostered by creating a print-rich environment (Graves & Watts-Taffe, 2008). Research reveals that print-rich classrooms can be described as print laboratories (Searfoss & Readence, 1983), or “filled” (Pressley, Ranking, & Yokoi, 1996) and “flooded” with print (Cambourne, 2000). Print-rich environments contain classroom libraries, labeled objects around the room, maps, posters, bulletin boards, and newsprint available to students. In a highly controlled study of vocabulary learning, Beck and colleagues (1982) found that the students who learned more incidental vocabulary were in a classroom with a word wall.

Recently, there has been increased emphasis on the need to make classrooms "print rich" by flooding them with books and other literacy tools and props. The properties, amounts, types, and arrangements of these literacy tools and props have been identified in general terms, such as: (a) descriptions of literate classroom environments (Cambourne, 1988; Goodman, 1986; Holdaway, 1980); (b) informal checklists and

inventories (Loughlin & Martin, 1987; Mayfield, 1992; Morrow, 2001; Pike, Compain, & Mumper, 1994; Tomlinson & Lynch-Brown, 1996; Tompkins, 1999); and (c) maps, classroom floor plans, and diagrams of various arrangements of literacy tools within classrooms (Lapp & Flood, 1993; Neuman & Roskos, 1993; Noden & Vacca, 1994; Reutzel & Cooter, 2000; Routman, 1991).

Morrow (1982) observed the physical characteristics of library corners in 30 nursery rooms, 37 kindergarten classrooms, 32 first-grade classrooms, and 34 second-grade classrooms in suburban and urban areas. She found that classroom library corners were poorly designed or nonexistent. Furthermore, Morrow found that no time was set aside for children to use books, and many classrooms did not provide regular literature programs. Extending the study, Morrow and Weinstein (1982) found that kindergarteners were likely to increase their activity in the library centers when there were numerous books, and it was physically inviting.

Taylor, Blum, and Logsdon (1986) researched the relationship between student reading achievement and print rich environment. They helped 12 kindergarten teachers implement classroom environments where students could develop initial literacy concepts easily and naturally. Observation data revealed the print in classrooms represented multiple and varied stimuli for reading and writing, was integrated across classroom activities, was routine, and allowed for scaffolding throughout the year. Moreover, the print in the classrooms was centered on children’s interest, language, and purposes. They also found that students in the high-implementation classrooms outperformed students in low-implementation on all measures of reading performance.

Loughlin and Ivener (1987) described the print rich environment in 22 first- and second-grade classrooms that were considered “high literacy environments” by literacy professionals. The researchers described the classrooms as organized into clearly defined areas for children’s use of literacy and numerous literacy materials. Most of the print was child-produced. Students could easily see recording tools and materials, references and books in every area, and children were engaged in many voluntary literacy activities. Teachers structured the day for students to have multiple opportunities to access and respond to the environment.

In an examination of school factors that affect the literacy achievement of elementary school children (second, fourth, and sixth graders) from low-income families, Snow and colleagues (1991) found that classrooms that provided access to challenging and stimulating literacy materials were linked to measures of vocabulary growth. The literacy materials included basals, workbooks, dictionaries, and other reference materials, trade books that represented a wide range of difficulty levels, and frequent visits to the library.

Brabham and Villaume (2002) noted that a word-rich environment stimulates vocabulary development and is the junction between vocabulary and comprehension. Moreover, they explained that a word-rich environment includes walls that are covered with records of word explorations. Although the research highlights the importance of a print-rich environment, there has been very little emphasis on creating a print-rich environment in the middle school classrooms. Other than studies conducted by Harmon et al. (2009) and Harmon, Wood, & Kiser (2009) very little vocabulary research has been devoted to creating a print-rich environment in the middle school.

There are several recurring themes that emerge from the work of vocabulary research. First, students need to be actively involved with processing the words. Moreover, the more actively engaged the student is in manipulating and reviewing the words, the deeper the processing will be. Secondly, rich and multiple exposures to words are important to word learning. Teachers must also create environments that foster enable students to reflect, explore and apply new word meanings.

Features and Instruction of Content Area Vocabulary

Beginning in the upper elementary grades and beyond where the vast majority of the reading is informational, vocabulary knowledge is one of many factors strongly associated with reading competence (Anderson & Freebody, 1981; Carney, Anderson, Blackburn, & Blessing, 1984; Hart & Risley, 2003; Hirsch, 2003; Kame'enui, Carnine, & Freschi, 1982; Stahl & Fairbanks, 1986). Content area vocabulary is much more specialized than vocabulary in the literacy classroom. The vocabulary is typically low frequency words that appear in specific content-specific contexts (Hedrick et al., 2008).Therefore, students do not see the terms across multiple contexts, and there is limited opportunity to process the meanings. Moreover, many vocabulary development programs utilize vocabulary list of words that commonly appear in written language (Carroll, Davies, & Richman, 1971; Harris & Jacobson, 1972). Typically, these high-frequency words do not focus on the vocabulary from content areas taught in school (Marzano, 2004).

Students must have a well-developed base of word-knowledge in order to handle the demands of specific content area reading. For example, in a social studies lesson devoted to the Holocaust, students must understand the geographic features of Europe as

well as the historical events that led up to the Holocaust. Beck, McKeown, & Gromoll (1989) conducted an analysis of four social studies texts used in fourth and fifth grade and found that the texts did not provide enough background information about the concepts in the text, but assumed that students had the depth of knowledge to make those connections. Moreover, the text did not provide clear explanations about concepts that could supports readers in making inferences about events and ideas. Reading experts have long acknowledged that students must understand between 90 and 95% of the words to comprehend the text (Nagy & Scott, 2000); therefore, content learning may be comprised due to a student's limited background and vocabulary knowledge.

Alverman (2001) explained that content area classes force students to deal with technical vocabulary and shifting modes of literacy. Content area words are conceptually important, represent complex ideas, and are unfamiliar to students (Hedrick, Harmon, & Wood, 2008). When students learn new vocabulary in the content area they are also learning larger concepts. Furthermore, vocabulary knowledge is closely linked to the difficulties students experience in handling the demands of content textbooks (Harmon et al., 2005). Content area textbooks are dependent on specific terms used in the specific subject area (Marzano, 2004).

Features for Specific Disciplines

Features of specific disciplines will be discussed, as well as the research base for providing effective vocabulary instruction for students below proficient level in the content areas.

Mathematics.

The language of mathematics is complex, content-bound, and abstract, which results in difficulty communicating mathematics terminology to others (Kouba, 1989). Shields, Findlan, and Portman (2005) stated, "The link between mathematics vocabulary knowledge and mathematical comprehension is critical because without knowledge of mathematics vocabulary, complex concepts cannot be understood and more advanced tasks cannot be performed" (p. 37). Without strong vocabulary knowledge in mathematics, students are unable to successfully read and understand the text. Much of the vocabulary used in mathematics classrooms is rarely used or seen in everyday life, so students have insufficient background knowledge of these words (Monroe & Panchyshyn, 1995-1996).

Another factor impacting the difficulty of learning mathematical vocabulary is that many mathematics terms have different meanings outside the mathematics classroom (Noonan, 1990). Also, many mathematical terms are considered abstract (Vacca & Vacca, 1996). In a study conducted by Miller (1993), she explained "many mathematical words represent concepts and not objects. Such words as *quotient, fraction*, and *factor* have no unique, unambiguous representations in the real world but to describe concepts" (p. 312).

Science.

The emphasis of scientific terminology in science textbooks vocabulary is an issue for many students. The terminology found in most science textbooks raises the readability level which causes problems in comprehension for many students. For instance, Groves (1995) found that textbooks continue to emphasize science terminology,

which hinders students' ability to comprehend the text. Many science terms create dense reading (Halliday & Martin, 1993) because there are numerous science specific terms packed into a sentence (Fang, 2005). Moreover, the number of technical terms used in K-12 science textbooks tends to increase with grade level (Yager, 1983). Marshall and Gilmour (1991) found that many New Guinea students in grades 7-12 had a superficial understanding of nontechnical words. Nontechnical words were words that are not conceptually loaded but are found frequently in science textbooks, and they are not part of a teacher's instructional plan. The lack of understanding of nontechnical words resulted in students' failure to effectively communicate science ideas in class.

Social studies.

Primarily, the social studies textbook is the main resource for instruction (Harmon, Hedrick, & Fox, 2000; Okolo, Englert, Bouck, & Heutsche, 2007). Woodward (1987) explained that the social studies textbooks do a poor job of elaborating on the fundamental concepts underlying words in social studies. Vocabulary use in many social studies textbooks is not that of everyday conversation, and the concepts are typically abstract (Brown, 2007). The narrative style of the social studies texts is characterized by complex syntax, technical vocabulary, and a lack of helpful context (Brown, 2007).

Harmon and colleagues (2000) analyzed the vocabulary instruction made available in social studies textbooks in grades four through eight. They found that a majority of textbook publishers continue to include vocabulary activities that represent traditional modes of vocabulary learning such as worksheets and matching definitions. Furthermore, they found that instructional support did not encourage students to make connections or apply the knowledge.

Language Arts.

Vocabulary instruction typically relies on basal reading instruction, which depends on the editor or teacher to preselect vocabulary terms deemed important (Ruddell & Ruddell, 1995). Beck, McKeown, and McCaslin (1983) conducted an analysis of vocabulary instruction in two widely used basal reading series. They found that students were expected to learn the meanings of words by inferring their meanings through story context even though the context was not always clear in revealing word meanings. In a study of middle and upper grade manuals, Durkin (1981) examined five basal series and found little attention devoted to new vocabulary.

Instructional Techniques

The following section highlights effective vocabulary instructional techniques in specific content areas. Content area reading instruction was first emphasized in the 1900's in recognition of a reader's need to learn various strategies in order to read and understand specific subject matter (Moore, Readence, & Rickelman, 1983). The foundational work by Herber (1970) focused on reading instruction and the effects of reading instruction on student learning. Effective instruction of content area vocabulary includes linking new words and concepts with already known concepts and providing multiple opportunities for students to use and apply newly acquired words (Nagy, 1988).

Mathematics.

Although there are few studies devoted to mathematics vocabulary instruction, there are several important implications. First, the use and effectiveness of graphic organizers in teaching vocabulary in content areas is well documented (Merkley & Jefferies, 2000/2001; Moore & Readence, 1984). Graphic organizers are two-dimensional

arrays showing relationships among concepts (Rice, 1994). For example, Monroe (1977) compared the use of a definitional-only model with the Concept of Definition graphic organizer model. A Frayer discussion format followed the Concept of Definition model (Schwartz, 1998). The results indicated that students' Concept of Definition/Frayer discussion model contained more mathematical concepts than those students who used the definitional model. Therefore, it appears that the use of graphic organizers with an in depth discussion can effectively impact the mathematical vocabulary of students.

Monroe and Pendergrass (1997) used a combined approach of a discussion model (Frayer, Frederick, & Klausmeier, 1969) with Concept of Definition (Schwartz, 1998). This model, also known as integrated CD-Frayer Model, was implemented with fourth graders during a two week measurement unit. In comparison with the definition-only model, students using the integrated CD-Frayer Model appeared to be more effective in increasing their use of mathematical vocabulary in their writing.

Secondly, Jackson and Phillips (1983) developed an instructional program that included vocabulary-oriented activities in order to support seventh-grade students' learning of ratio and proportion. The vocabulary-oriented activities emphasized recognition and identification of terms and symbols, knowledge of literal meanings for the terms and symbols, categorization of terms and symbols through inclusion and exclusion tasks, and identification of examples and non-examples of the concepts. Students participating in the vocabulary-oriented activities outperformed the control group of students on a set of computational items and a set of verbal items.

To summarize, teachers need to make students aware of different mathematical terminology and how context can change the meaning of those terms, the close

relationship between conceptual understanding and vocabulary knowledge, and the reading demands of mathematics textbooks (Harmon et al., 2005). Furthermore, students must be given multiple opportunities to actively work with the mathematical terms in order to develop and expand their vocabulary knowledge.

Science.

Recent research surrounding science vocabulary and retention show that elementary and middle school students learn, understand, and retain science vocabulary better if class instruction is discussion-oriented (Rosenshine & Stevens, 1985; Stahl & Clark, 1987; Stahl & Vancil, 1986). Discussion-oriented instruction was a critical component to ensuring students generate personal meanings and connections of the target words. This is further supported by the sociocultural theory in which learning is deeply rooted in social activities and connections (Vygotsky, 1978).

In order to support students' vocabulary development in science, most of the instructional techniques have focused on the nature of science and instructional interventions. For instance, Marshall and Gilmour (1991) found that many New Guinea students in grades 7-12 had a low level of understanding for nontechnical words, which resulted in their inability to communicate ideas in the science classroom.

The use of semantic relatedness has also shown promising results for enhancing student understanding of science terms. Bos and Anders (1990) compared the effects of three knowledge-based interactive vocabulary instructional techniques in a middle school science classroom. The subjects were 61 middle school students with learning disabilities. They found that students involved in semantic mapping, semantic-feature analysis, or the semantic/syntactic feature analysis group outperformed the students in the

definition only group. In studying science classrooms, Kossak (2007) found visual learning was also beneficial to word learning.

Social Studies.

Although the research studies devoted to social studies vocabulary are not as extensive, there are some implications for vocabulary instruction. Research on social studies terminology has documented the frequency of affixes and roots in social studies terms (Milligan & Ruff, 1990), the use of categorizing as effective way to engage students with social studies texts (Harmon, Kaims, & Whittington, 1999), the importance of preteaching vocabulary terms to improve comprehension (Carney, Anderson, & Blackburn, 1984), and semantic relatedness (Anders et al., 1984).

Baumann and colleagues (2003) compared the effects of morphemic and contextual analysis instruction with textbook vocabulary instruction in eight fifth grade social studies classrooms. The research indicated that morphemic analysis students had an advantage in inferring meanings of novel words with affixes, and they were more successful in inferring the meanings of morphological and contextually decipherable words in a delayed test but not in an immediate test. The results support the teaching of specific vocabulary and utilizing morphemic analysis.

Categorizing social studies vocabulary by people, places and events has also shown to be an effective instructional technique (Harmon et al., 2005). Katims and Harmon (1999) implemented PEP, a social studies learning strategy, to help seventh graders engage with social studies texts. PEP stands for “person, event, or place.” The strategy required students to read titles and subtitles and predict if the section was going to be about a person, event, or place. Results indicated significant increase in student’s

comprehension, metacognitive ability, attention to information in texts, and confidence in understanding ideas in authentic texts.

Carney, Anderson, and Blackburn (1984) found that the preteaching of vocabulary terms significantly improved fifth-graders reading comprehension when they read social studies text. Moreover, structural analysis as a means for supporting and expanding vocabulary knowledge has also shown promising results. Many social studies terms have Latin and Greek roots that can be incorporated in other content areas. Milligan and Ruff (1990) examined the use of social studies terms in textbooks. In their survey of five social studies textbooks across multiple grade levels, they found that approximately 71% of the terms contained meaningful affixes and roots. Therefore, they believe teachers should highlight meaningful components within a word and help students make connections with other terms containing the meaningful affix or root.

The use of semantic mapping has also shown promising affects on students' vocabulary knowledge. Anders et al. (1984) used semantic feature analysis as a prereading and postreading strategy to teach high school learning disabled students in social studies. Students who received instruction in semantic feature analysis outperformed the control group on the vocabulary test of words that were covered as well as a general comprehension test of the material.

In summarization, preteaching, teaching categorization, using contextual approaches, teaching morphology, and the use of semantic mapping have exhibited effective results in vocabulary learning of social studies terminology.

Language Arts.

Beck and colleagues (1980; 1983) seminal vocabulary program of rich vocabulary instruction has been found effective in teaching vocabulary. The instructional program provides students with definitions of words and also extends instruction by including experiences that promotes and reinforces deep processing of word meanings. Beck and her colleagues (Beck et al., 1982; McKeown et al.1983) examined the effectiveness of their vocabulary program in comparison to a control group who participated in regular reading and language arts activities. Students participating in the rich vocabulary instruction were superior in three ways: (a) Instructed students learned the meanings of more of the words that were taught; (b) They demonstrated greater speed of lexical access; and (c) Comprehension of stories that contained taught words was superior for instructed students.

In another study conducted by McKeown and colleagues (1985), they examined the effects of the nature of vocabulary instruction and the frequency of encounters of taught words in fourth grade students' ability to learn vocabulary. Students were separated into one of three kinds of instruction: traditional instruction that comprised of learning definitions for words, rich instruction, or rich/extended instruction. Rich instruction included multiple exposures to words in various contexts and engaging students in active thinking about word meanings. Rich/extended instruction included the components of rich instruction as well as encouraged students to be aware of words outside the classroom. The results demonstrated students' comprehension of stories containing instructed words was greater under rich/extended instruction.

Bos and Anders (1990) compared the effectiveness of knowledge -based interactive vocabulary strategies with a definition instructional approach on learning disabled students' reading comprehension. The interactive condition employed interactive, discussion oriented strategies designed to activate prior knowledge, share the knowledge with each other, make predictions, and confirm and justify the predictions. Results suggested students participating in the interactive intervention demonstrated greater comprehension and vocabulary learning than students receiving definition only instruction.

Clustering semantically related words and labeling them has also shown promising results. Bean, Inabinette, and Ryan (1983) evaluated the effectiveness of using Taba's List-Group-Label (1967) for teaching 10th through 12th-grade students a series of literary terms. The students participating in the List-Group-Label group read an essay that discussed a specific literary element, were presented with an explanation of the element by the teacher, read a story that illustrated the literary element, and then completed a List-Group-Label lesson on the literary element. The List-Group-Label students were more successful in learning literary terms than students who received similar instruction without the List-Group-Label component.

In summarization, vocabulary instruction needs to provide adequate opportunities for students to interact, discuss the knowledge, perform multimodal tasks, and is long term.

Student Choice

Choice is also an important tool in student learning (Cordova & Lepper, 1996; Kohn, 1993; Reynolds & Symons, 2001). Previous research found that providing students

with choices in learning activities increases students' achievement, engagement, perceived competence, and levels of aspiration (Cordova & Lepper, 1996; Westberg & Archambault, 2004). There are several studies that have examined the impact of student choice in vocabulary learning and instruction. For instance, Fisher, Blachowicz, and Smith (1991) studied the effects of allowing fourth-grade students in literature circles to select their own words. The students chose words that were at or above grade level and were able to retain knowledge of their meanings. Dole, Sloan, and Trathen (1995) examined the effects of teaching tenth grade students how to select words, learn the words on a deep level, and discuss. The students outperformed students taught with traditional methods of vocabulary instruction. Harmon's (1998a, 1998b, 1999, 2000, 2002) research further supported the effectiveness of student self-selection. In a recent study, Harmon, Hedrick and colleagues (2005) found that students were as effective as teachers in choosing vocabulary from expository texts.

The Vocabulary Self-Collection strategy **(**Haggard, 1986; Ruddell & Shearer, 2002) has also shown promise in relation to student choice and word learning. The Vocabulary Self-Collection Strategy (Haggard, 1982, 1985, 1986, Ruddell, 1992, 1993) is intended to foster long-term vocabulary growth and promote the acquisition and development of the language of academic disciplines (Ruddell, 1993). After reading, students (in small groups) identify words or terms in the reading they wish to learn or know more about. Each team nominates one word or term and tells where they found the word, what they think it means in context, and why they think the class should learn it. The teacher also nominates a word. During class discussion, words are put on the board, defined first from context and group knowledge, and then, if needed, from references.

Ruddell and Shearer (2002) found that self-selection of vocabulary is effective for increasing depth and breadth of student vocabulary knowledge and for developing students' abilities to be strategic, independent word learners. Using the Vocabulary Self-Collection strategy, they found that the strategy positively impacted students' word learning.

In her study with college students, Haggard (1986) found that self-selection enhanced vocabulary learning and fostered the development of systematic and independent word learning strategies. Additionally, Jimenez, Garcia, and Pearson (1996) noted self-choice as a powerful motivator for word learning. Harmon and colleagues (2008) explored an instructional framework incorporating student self-selection of words as part of an eighth grade Holocaust unit. Results showed that students were able to self-select terms that were critical to reading the expository passages.

In conclusion, specific vocabulary instruction in content area classrooms is an important factor for a deeper processing of understanding to promote comprehension. Direct instruction in word meanings and instruction in strategies that foster independent vocabulary acquisition skills (Baumann et al., 2003; Kamil et al. 2008) are important in fostering students' word learning in content area classrooms. Moreover, it is important that students become actively engaged in their vocabulary learning and have choice over their learning. Although positive results have been exhibited, it is important to note that the potentials for enhancing vocabulary development have not yet been capitalized (Spencer & Guillaume, 2006).

Teacher Beliefs and Student Achievement

The following section highlights content area teacher's beliefs of implementing literacy strategies in their specific content area.

Teacher Beliefs

Addressing the literacy needs within content area classrooms has been well-established (Anders & Levine; 1990; Bean, 2000; Dishner & Olson, 1989; Herber, 1970; Moore, Readence, & Rickelman, 1983). Much of the literature related to literacy in the content areas focuses on teacher resistance to implementing content literacy approaches (Alvermann & Moore, 1991; O'Brien & Stewart, 1992; O'Brien et al., 1995; Ratekin, Simpson, Alvermann, & Dishner, 1985). Several factors are involved in the resistance, including middle- and high-school traditions and cultures, teacher beliefs about the roles and responsibilities of content area teachers (O'Brien et al., 1995), and content teachers' lack of confidence in their own preparation as literacy teachers (Greenleaf, Schoenbach, Cziko, & Mueller, 2001).

Traditionally, secondary teachers favor the transmission model of instruction (Bean, 2000; O'Brien, Stewart, & Moje, 1995), in which content is disseminated through direct instruction. However, content literacy is student-centered, collaborative, discussion based, and the teacher acts as the facilitator. O'Brien and colleagues (1995) noted that a shift to a more student-centered pedagogy can be difficult and cause teachers to resist adopting new techniques. Furthermore, pressures to cover the content within specific content areas can impede a teacher's willingness to implement literacy strategies. Many secondary school teachers perceive literacy to be the responsibility of English teachers (Lester, 2000), or they have difficulty balancing literacy and content instruction.

Recent research suggests that teachers perceive teaching literacy in their content areas as important. However, they feel ill-equipped to meet their students' literacy needs (Bintz, 1997; Mallette, Henk, Waggoner, & Delany, 2005). When teachers implement vocabulary instruction in their content area, typically an instructional context approach (Herman & Dole, 2005) or definitional approach (Ogle & Blachowicz, 2002) is used. The instructional approach consists of using sentences in the teacher's edition to introduce vocabulary before students read the selection. Students are either told what the word means or they use context clues to figure out the meaning of the word. The definitional approach requires students to look up the definitions of preselected words. Both approaches require background knowledge about the topic in order to use the context of the sentence or to select the correct meaning in the dictionary.

Summary

In summary, vocabulary is a critical component of successful reading comprehension (Beimiller & Slonim, 2001; Chall et al.1990; Pinnell, Lyons, Deford, Byrk, & Seltzer, 1994). Using a sociocultural framework to guide this study, the social process and application of learning is stressed (Appel & Lantolf, 1994; Hall, 1995; Kramsch, 1993; Moll, 1994; Toohey, 2000; Warschauer, 2005). Middle school students are expected to read and comprehend large amounts of content- specific information. The vocabulary found in each content area is specific and technical to that particular domain. Without knowledge of content-area vocabulary, students will struggle to comprehend the text. Therefore, vocabulary instruction and learning are vital to promoting success in content area classes. These facts suggest only a rich, comprehensive, and multifaceted vocabulary program is likely to develop and bolster students' vocabularies (Baumann &

Kamé enui, 2004; Baumann, Ware, & Edwards, 2007; Blachowicz, Fisher, Ogle, &Watts-Taffe, 2006; Graves, 2006, 2009; Stahl & Nagy, 2006).The next section, chapter three, discusses the methodology used to understand the effects of an interactive vocabulary strategy, the interactive word wall, on teachers' and students' perceptions and use of word learning.

CHAPTER 3: METHODOLOGY

Chapter one has established the foundation for this study by introducing the issues of a limited vocabulary and the multifaceted problems that face youth with limited vocabularies, in addition to providing an in-depth description of this study. The first chapter also documented my theoretical framework and personal perspective, as well as my research questions and defined relevant terms. The second chapter called into focus the pertinent literature substantiating effective vocabulary instruction and methods to increase depth of content area vocabulary for middle school students. Of primary consideration is the research base associated with effective vocabulary instruction and learning vocabulary in content area classes. The purpose of this study was to examine teachers' and students' perceptions and use of an interactive vocabulary strategy, an interactive word wall, as the focal point of systematic instruction in a content area classroom.

This chapter describes procedures I employed for this qualitative methodology. The goal of qualitative research is to examine a social situation or interaction by allowing the researcher to enter the world of others and attempt to achieve a holistic rather than a reductionist understanding (Bogdan & Biklen, 1998; Locke, Spirduso, & Silverman, 2000; Mason, 1996; Maxwell, 2005; Merriam, 1998; Merriam & Associates, 2002; Patton, 1990; Schram, 2003: Schwandt, 2000). Furthermore, it implies an emphasis on discovery and description, and the objectives are generally centered on extracting and

interpreting the meaning of experience (Bogdan & Biklen, 1998; Denzin & Lincoln, 2003; Merriam, 1998). I used a qualitative design to answer the three research questions, which included observations, interviews, and surveys, Knowledge Rating Scales, quizzes, and classroom artifacts.

This study specifically used a case study approach. Stake (1995) explained the following:

> "For the most part, the cases of interest in education and social service are people and programs. Each one is similar to other persons and programs in many ways and unique in many ways. We are interested in them both for their uniqueness and commonality. We seek to understand them. We would like to hear their stories" (p. 1).

This qualitative case study utilized four distinct classrooms, each from four content areas, as individual cases. In seeking to understand the phenomenon, this study addressed the following research questions:

(1) How do specific content area teachers and students perceive interactive word walls as an instructional strategy for enhancing vocabulary learning?

(2) How do specific content area teachers and students use and adapt an interactive vocabulary strategy, the interactive word wall, as a tool for creating a word-rich environment?

(3)What impact does the use of an interactive vocabulary strategy, the interactive word wall, have on student word learning?

This chapter describes the study's research methods and includes discussions around the following areas: (a) Rationale for the research approach, (b) Role of the

researcher, (c) Description of the research context, (d) Methods of data collection, (e) Approach to the analysis and synthesis of the data, and (f) Trustworthiness. This chapter culminates with a brief concluding summary.

Case Study Design

Case study research allows researchers to describe, understand, and explain bounded systems, situations or phenomena within real-world contexts (Tellis, 1997). In this instance, the case of four teachers and their students, within a specific context of the interactive word wall experience, constitutes a bounded system. Tellis (1997) explained that case studies are often used to answer research questions that investigate how or why a phenomenon works or occurs. I sought to understand the meanings and conceptualizations each teacher and their students make from their experiences using an interactive word wall as the focal point of systematic vocabulary instruction.

I chose a case study design with an emphasis on qualitative data. Yin (2009) explained that case study research can involve a mix of qualitative and quantitative data. Merriam and colleagues (2002) stated, “The study of a bounded system can include quantitative as well as qualitative data” (p. 178). I believe that the combination of data can provide a better picture of the participants’ experiences and understandings of the interactive word wall. I collected “detailed information using a variety of data collection procedures over a sustained period” (Creswell, 2003, p. 15).

Data for this study included in-depth interviews, observations, pre-post surveys, pre-post Knowledge Rating Scales, vocabulary quizzes, and physical artifacts. Interpretation of the data took place in two stages: within-case and cross-case analysis. Miles and Huberman (1994) explain within-case analysis involves analyzing,

interpreting, legitimizing data that help describe "phenomena in a bounded context that make up a single 'case'-whether that case is an individual in a setting, small group, or larger unit such as a department, organization, or community" (p.90). Within-case analysis includes a description of each case and themes within each case. Moreover, Merriam (1998) clarifies that each case is first treated as a comprehensive case in and of itself. Once the analysis of each case is complete, then cross-case analysis takes place. The data is analyzed across cases (Schwandt, 2001) and represents a thematic analysis across cases (Creswell, 2007). As previously stated, this study is a case study with an interpretative emphasis on within-case and cross-case analysis.

Role of the Researcher

Spradley (1980) explained that the research site should be chosen based on simplicity, accessibility, possibility of remaining relatively unobtrusive, permissibleness, assurance that the activities of interest will occur frequently, and degree to which the researcher can truly become a participant. As the current literacy coach at Johnson Middle School (a pseudonym) for the past four years, I am considered an "insider" because I have a thorough understanding of the school culture and climate. Being an "insider" (emic) rather than an "outsider" (etic) allowed me to study this phenomenon more accurately (Yin, 2003). As a member of the school faculty, I have developed working relationships with the teachers, which have enabled me to gain access to teachers and their students. This role has allowed me to develop a high level of trust among the school faculty.

The relationships among the participants as the observer, the people in the field, and group interactions are key components of the participant-observer method of research

(Jorgensen, 1989). My role in this research study is that of participant-observer (Esterberg, 2002; Huberman & Miles, 2005) in which I became a participant in the context being studied. As a participant-observer, I was immersed in the social and cultural setting of the school. I also observed the work of the teachers and students within a specific classroom context. The dual role of a participant-observer proved to be complementary. As a participant, my job was to support and deepen teachers' understanding and use of the interactive word wall instructional design. There were several instances in which I supported and facilitated one particular teacher in the use of the interactive word wall. As an observer, I interpreted and understood teachers' and students' perceptions of the interactive vocabulary strategy.

It is important to address the ethical issues of participant-observer. Spradley (1980) advises informants' rights, interests, and sensibilities must be safeguarded; participants should not be exploited; subjects should be made aware of the purposes of the research study; participants' privacy should be protected. During the initial phases of the study, all participants were made aware of the purpose of the research study by signing the informed consent. Pseudonyms are also in place for all participants to ensure anonymity. I also kept detailed field notes during and after my interviews and observations. It is important to note that while all data analyzed and presented was subject to strict quality control, there is a possibility that personal biases on my behalf may still exist.

Research Context

Research site

This investigation took place in a public middle school located in a large, southeastern urban area, with an enrollment of 880 students during the 2010-2011 school year. The student body at Johnson Middle School includes approximately 45% Hispanic, 41% Black, 13% White, and 2% Multiracial in grades six, seven, and eight. Of the 880 students, 160 students were classified as Limited English Proficient and 120 were classified as Exceptional Children. Approximately 86% of the student population received free/reduced lunch.

This site was chosen for several reasons including convenience. I am the literacy coach who has worked at the school for over four years. During this time, I have established relationships with faculty, students and parents. As an insider, my presence in the classrooms will unlikely influence or change the natural environment. Glesne (2006) warns researchers regarding the dangers of conducting “backyard research” (p.31). Since I did not evaluate the participants, there were no foreseen conflicts of interest. Additionally, I was sensitive to the roles and relationships of the teacher participants. I continually held conversations with the teachers throughout the study to ensure their comfort with the research process. I also kept a self-reflexive journal in order to document my belief systems and how they link to this study. This ensured my interpretations and conclusions really reflected the nature of the study. It is important to note that there may have been issues of conflict that I did not see during this study.

Participants

Creswell (2002) explained in a qualitative investigation that the researcher intentionally selects a specific setting or persons to participate in a study because the individuals are most likely to help the researcher to understand the phenomenon under investigation. This is sometimes referred to as purposive sampling (Merriam, 1998) or judgment sampling (Gay, Mills, & Airasian, 2006). The reason for purposeful sampling lies in selecting information-rich cases, with the objective of yielding insight and understanding of the phenomena under investigation (Patton, 1990). Therefore, purposeful sampling strategies were used in selecting participants. Patton (2002) explained that purposeful sampling involves strategically and purposefully selecting participants with rich information. Availability, purpose of the study, and the researcher's resources dictated the participants and numbers included in this study.

I purposefully selected four teachers, each teaching different content areas based on the following criteria: building level principal's recommendation, at least five years of teaching experience, full teacher certification, and limited student behavior referrals (less than 5). These criteria are important so that secondary issues did not impact this study. One Hispanic male, two White females, and one Black female participated in this study. The teachers who participated in this study represented a range from eight to thirteen years of teaching experience, with three of the teachers holding a Master's degree. All of the participants currently teach eighth grade. Table 1 outlines the teacher participant profiles.

TABLE 1

Demographic Data of Teacher Participants

Pseudonym	Age	Gender	Ethnicity	Grade	Content Area	Years of Teaching
Mr. George		Male	Hispanic	8th	Mathematics	11
Ms.Chemical		Female	Black	8th	Science	8
Ms. John		Female	White	8th	Social Studies	13
Ms. Smith		Female	White	8th	Language Arts	11

Adult participants

Since I am part of the school faculty, I have the ability to communicate with teachers face-to-face and through email. I also had permission from the principal to conduct the study. Once I had Institutional Review Board (IRB) approval to carry out my study, I held an information session on my study for the four prospective teacher participants. The session included information describing the purpose of the study. At the end of the session, I passed out consent forms to the interested participants. I also sent out individual follow-up emails to prospective participants. The emails included attachments that contained a letter of introduction describing the purpose of the study and a consent form required for participation in this study. A hardcopy of the attachments were also placed in the teachers' mailboxes. A week after the initial email, I sent out follow-up emails outlining the study to the teachers. All four teachers agreed to participate in the study by replying to my email.

The teachers in this study participated in extended professional development sessions geared towards equipping content area teachers with the tools to use the interactive vocabulary strategy- the interactive word wall (See Appendix F for the professional development script). The professional development was designed and delivered by the researcher. The format of the professional development included explanation and modeling by the researcher, teacher participation using the interactive vocabulary strategy, and extensive group work. The content of the professional development was guided by the apprenticeship approach to content literacy instruction (Schoenbach, Greenleaf, Cziko, & Hurwitz, 1999). This approach focuses on teacher modeling and guiding students to develop strategies to overcome obstacles while reading. I also provided teachers with professional literature aligned to vocabulary instruction and learning. We practiced using the interactive word wall tool, planned for lessons and units, and reflected on our learning throughout the professional development sessions.

Student participants

Additionally, each teacher participant chose one section of students to participate in the study. All student-participants were enrolled in the eighth grade at Johnson Middle School. Three of the four sections were heterogeneously mixed groups, representing a range of reading abilities. The last section included a class consisting of ten boys. Each section of students was engaged in specific word learning activities related to the interactive word wall instructional design. They participated in small-group and whole-class activities, including instructional practices that highlighted multiple exposures, the integration and meaningful use of vocabulary. Multiple exposures to words included repeated readings and discussions (Baumann et al., 2003; Baumann & Kame'enui, 2003;

Beck, McKeown, & Kucan, 2002; Bryant et al., 2003; Harmon et al., 2005; Jitendra, Edwards, Sacks, & Jacobson., 2004; NRP, 2000; Stahl & Fairbanks, 1986; Swanborn & de Glopper, 1999). Students also began to move beyond the definitional level and started thinking about the use of words in meaningful contexts to produce deeper understanding of the words (Beck, McClaslin, & McKeown, 1980). Students were also engaged in active thinking about word meanings, how they might use the words in different situations, and about the relationships among words (McKeown & Beck, 2002).

I held an informational session for each of the four classes prior to the study implementation. I provided each student with a letter of introduction describing the purpose of the study and a consent form required for participation in this study. Approximately, 62 students participated in the study. Students represent a range of academic ability, race, and gender.

Teachers also chose three students from their class to participate in pre and post interviews. Twelve students participated, six Black and six Hispanic, in pre and post semi-structured interviews. Table 2 outlines the student participation profiles.

In this section, I report background information about the student interviewees. I also provide their math and reading achievement levels on the North Carolina End-of-Grade Tests (NC EOGs). The EOGs are designed to measure student performance on the goals, objectives, and grade-level competencies specified in the North Carolina Standard Course of Study. Achievement levels are one way the NC EOG data is reported. Achievement levels are predetermined performance standards. Four achievement levels are reported in reading and mathematics. Students performing at Level I do not have sufficient mastery of knowledge and skills in this subject area to be successful at the next

grade level. Students performing at Level II demonstrate inconsistent mastery of knowledge and skills that are fundamental in the subject area and are minimally sufficient to be successful at that next grade level. Students performing at Level III demonstrate consistent mastery of grade-level subject matter and skills and are well prepared for the next grade level. Students performing at Level IV consistently perform in a superior manner clearly beyond that required to be proficient at grade-level work (http://www.ncpublicschools.org/accountability/testing/eog/).

TABLE 2

Demographic Data of Student Interviewees

Pseudonym	Age	Gender	Ethnicity	Grade	Content Area	Reading Level	Math Level
Mario	12	Male	Hispanic	8th	Language Arts	I	III
Gilberto	14	Male	Hispanic	8th	Language Arts	II	III
Tevin	13	Male	Black	8th	Language Arts	II	III
Linda	13	Female	Hispanic	8th	Social Studies	II	II
Leticia	13	Female	Hispanic	8th	Social Studies	I	II
Jesus	13	Male	Hispanic	8th	Social Studies	I	II
Asha	13	Female	Black	8th	Math	I	II
Bionca	14	Female	Black	8th	Math	II	III
Davis	13	Male	Black	8th	Math	II	III
Latoya	14	Female	Black	8th	Science	II	II
Shanissa	13	Female	Black	8th	Science	II	II
Marisol	13	Female	Hispanic	8th	Science	II	III

Data Collection Methods and Procedures

The goal of data collection procedures is to provide an insider's perspective to the individual and shared experiences of the research participants (Stake, 2006). The data collected came from multiple sources following Patton's (1990) ideas:

> Multiple sources of information are sought and used because no single source of information can be trusted to provide a comprehensive perspective… By using a combination of observations, interviewing, and document analysis, the fieldwork is able to use differ rent data sources to validate and cross-check findings (p.244).

The data collected consisted of pre-post surveys (see Appendix B), pre-post Knowledge Rating Scales (see Appendix C), vocabulary assessments, pre-post teacher interviews (see Appendix D), pre-post student interviews (see Appendix E), observations (see Appendix F), and artifacts related to the case. Data collection began early in the fall of 2010 before the participants began professional development training devoted to the use of the interactive vocabulary strategy- the interactive word wall. The professional development exposed teachers to the use of the interactive word wall within their specific content area. Data collection occurred in three phases: before (Phase I), during (Phase II) and after (Phase III) the use of the interactive word wall instructional design (see Table 3).

TABLE 3

Research Methodology

Phase No.	Description
I Surveys, interviews, and assessments	Teacher and student interviews took place prior to using the interactive word wall in order to describe their perceptions and use of the vocabulary instructional strategy- the interactive word wall. All students were also asked to complete a survey in which they were asked to reflect on their knowledge of vocabulary instruction and learning. To assess prior vocabulary knowledge, students completed a pre-Knowledge Rating Scale (Blachowicz & Fisher, 2006).
II Professional Development and Instruction, observations, and weekly assessments	The researcher provided training on the use of an interactive word wall (Harmon et al., 2009). After the training, the teachers implemented the interactive word walls in their classrooms for six weeks During this time, physical artifacts and observational data were collected. Students were also given weekly teacher-created assessments in order to assess vocabulary learning.
III Post-interviews, post-surveys, post-assessments	Upon completion of the six week intervention, the researcher interviewed the teachers and students using parallel questions. Students also completed a post-Knowledge Rating Scale (Blachowicz & Fisher, 2006). All students were also asked to complete a post-survey.

Phase I

In order to address the three research questions, students participating in this study completed a 12 item Likert-scale online survey in order to further investigate their beliefs and understandings of word learning. The survey appears as Appendix B. Creswell explained, "Surveys provide a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (p.153). I chose a survey as an instrument to conduct with all students participating in the study. The online survey was administered once at the beginning and once at the end of the study. An advantage of using a survey is that it is relatively unobtrusive and easily administered and managed (Fowler, 1993). I developed the self-reported online survey based on the current literature and in consultation with content specialists. The survey was hosted on Zoomerang.com, a private and secure website. In responding to the survey, students were asked to read each statement and consider how well it described their beliefs about word learning. They will respond to each statement by marking "Always" (5), "Often" (4), "Sometimes" (3), "Seldom" (2), or "Never" (1). Prior to the web survey being available, I met with teachers to decide on a convenient date and time for the students to take the survey.

I also used an adaptation of the Knowledge Rating Scale (Blachowicz & Fisher, 2006) to assess students' knowledge of key words in their unit of study. Each content area teacher administered the Knowledge Rating Scale to their particular class of students prior to beginning the unit of study. Teachers chose 10 target words that would be presented during the unit of study for each content area. The Knowledge Rating Scale

appears in Appendix C. This tool enables students to determine their level of understanding about the words. Descriptive statistics were used to analyze the data.

The use of in-depth interviews was also used to describe the participants' perceptions and use of the interactive word wall. The interview is an important tool in qualitative research (Kvale, 1996; Merriam, 1998; Seidman, 1998). Patton (1990) explains, "qualitative interviewing begins with the assumption that the perspective of others is meaningful, knowable, and able to be made explicit" (p. 278). I chose to use the interview as a data collection method because it provides an opportunity to collect participants' experiences in their own words.

The interview protocol (see Appendix D and E) is an adaptation of Hoffman and Sailor's (2004) TEXIN-3 Assessment Tool for evaluating classroom literacy environments. The TEXIN-3 is a research tool and protocol designed to assess the quality of the classroom literacy environment. The adapted interview protocol is designed to capture and record understandings of the word wall as well as its function, value and usefulness. Harmon and colleagues (2009) adapted the TEXIN for their 2009 study to address teacher perceptions of a word wall as part of systematic vocabulary instruction. For the purposes of this study, I chose to use the adapted version of the TEXIN used by Harmon and colleagues. The teachers and students were interviewed before the instructional intervention. All four teachers were interviewed, as well as three of their students. Therefore, a total of twelve students were interviewed (see Table 2). Each teacher helped the researcher in purposeful selection of students by including a mix of gender, ethnicity, and academic ability as reported by North Carolina End-of-Grade (NC EOG) data and report card data.

Each participant interview lasted approximately 45 minutes to an hour. The teacher participants were interviewed at different times outside of school in order to avoid association of the interview questions with school responsibilities. The student participants were interviewed at different times inside the school in a quiet location. This ensured the participant's comfort and confidentiality, while providing a quiet location suitable for audio taping the interviews. Interviews were audio taped to provide an accurate and verifiable record of the data. Member checks were also done to verify and validate information observed and transcribed by the researcher (Merriam, 1998).

Phase II

I provided training on the use of an interactive word wall instructional framework (see Appendix F). I used Harmon and colleagues' (2009) work to guide the professional development. I adapted their professional development training protocol to meet the needs of the teachers and the time constraints. Due to the limited amount of planning time this school year, I had to limit my initial training for the teachers. The teacher participants explained the importance of only using two days to complete the professional development because they needed time to plan lessons, meet with parents and attend curriculum meetings. Therefore, the teachers participated in two forty-five minute sessions prior to the implementation of the interactive word wall instructional framework.

Professional Development.

Prior to the professional development sessions, teachers were given two articles to read: "Interactive word walls: More than just reading the writing on the walls" (Harmon et al, 2009) and "Promoting vocabulary with the interactive word wall" (Harmon, Wood, & Kiser, 2009). This provided teachers with necessary background knowledge before we

began the professional development training. Day one focused on building teacher background surrounding vocabulary instruction and learning. The session began by discussing background information pertaining to effective vocabulary instruction and the goals of vocabulary learning. I then used a power point presentation (see Appendix G) to guide the discussion explaining a word wall, the goals of the interactive word wall, and introduced the process of using the interactive word wall instructional framework. To introduce the interactive word wall instructional framework, we used the following criteria for selecting words to study (Beck, McKewon, & Kucan, 2002 ; Graves, 2006): How useful is the word?, Can you use the word in different situations or contexts?, Is the word used frequently?, Do you think the word can appear in different texts?, Is the word's meaning easy to explain in everyday language?, Does the word refer to something concrete or abstract?, and Does the word have multiple meanings?

We then discussed how students should select words to study based on their current text. To end the first day of professional development, I asked teachers to read an article entitled "New Fad Makes Kids- And Teachers-Crazy" and select three words that would be important to study as a class. They also completed a chart that included the following columns: Word/Context in Which the Word was used/ Meaning of Word

To begin day two, I asked teachers to discuss their initial ideas, concerns, and questions using the interactive word wall. Using the power point presentation, I explained and modeled all phases of the interactive word wall instructional framework using the word *entrepreneur* from the article (see Table 4).

Table 4

Instructional Framework for Professional Development

Instruction	Materials	Example
Introduce	• **Flashcard** • **Crayons** • **Poster chart**	**Word:** entrepreneur **Color:** yellow **Rationale:** Yellow represents creativity, energy, vitality, newness **Definitions:** Noun: A person who organizes, operates, and undertakes a new business
Connect	• **Index card** • **Poster chart**	**Symbol:** iPhone with several apps **Sentence Completion:** The *entrepreneur* was the first to create a digital news bullet application (for the smart phone in order to give customers up-to-date news). ”
Apply	• **Index card** • **Poster chart**	**Situation:** *Opening your own business* **Sentence*:*** *The female entrepreneur started a grocery delivery business for busy moms.*

I then had the teachers work with a partner and discuss the words they chose the previous night. They then had to decide on the top three words to study in-depth. As a group, we voted on the top four words to study. Using two words, each pair then went through all steps of the instructional framework. They completed the steps shown next in Table 5.

Table 5

Instructional Framework

Phase	Instruction
Introduce	• Select a color that represents the term. Make a connection to remember the word's meaning. One option is to refer to the color sheet handout. http://desktoppub.about.com/od/choosingcolors/p/color_meanings.htm • Write the word on the note card and then color the note card with the representative color the group selected. • Write 3-4 different ways to define the word. Write these on the group poster chart. Possible ways to define the word include the following: formal definition description metaphor example contrast synonym origin antonym
Connect	• Create a symbol to represent the word. This should be a simple drawing of an object or idea that relates to the word and helps you to remember the word's meaning. • Draw the symbol on another note card. • Develop 2 sentence completions for the word (Sentence stems that include the word and students have to complete the sentence). • Write these statements on the group poster chart.
Apply	• Think about a situation in which you would use the word. • Then write a word or draw a symbol to represent the situation on a note card. • Write the sentence to represent the situation on the group poster chart.

All pairs then presented their words and the information they compiled. I then answered questions about the implementation process and introduced them to the more specific teacher instructional framework and procedural steps.

Teacher Instructional Framework.

After the preliminary introduction of the word wall instructional framework was given (See Table 6), more specific instruction was given to the teachers. The interactive word wall instructional framework consists of the following phases: introduce, connect, apply and present. First, the teacher models how to make word selections by using the following questions (Beck, McKewon, & Kucan, 2002; Graves, 2006):

- How useful is the word? Can you use the word in different situations or contexts?
- Is the word used frequently? Do you think the word can appear in different texts?
- Is the word's meaning easy to explain in everyday language?
- Does the word refer to something concrete or abstract?
- Does the word have multiple meanings?
- Does the word have a prefix, suffix, or identifiable root?

The class will also brainstorm where to look for interesting words- books, the Internet, magazines, television, friends, parents, etc. Individually, students look for at least three words to put into a chart labeled, "Word/ Context in Which the Word Was Used/ Word's Meaning."

Students are then placed in heterogeneous groups of 3-4 students. As a group, students discuss their individual words and decide on the top five words every student

should learn. Each group will present their words to the class and provide support on the importance of each word. The class will select the top 10 words to study in depth. The teacher will also add two words for word study. The teacher will then give each group two words to work on.

*For each of the following steps, the teacher will model using his/her selected words and then support the students as needed.

Table 6

Lesson Plan

Phase	**Instruction**
Introduce	To introduce the word, the teacher will select a color to represent the word and define the word in at least 3 different ways (definitions, examples, synonyms, and antonyms). Using a poster chart, the teacher will write the word, the color, and three ways to define the word.
Connect	The teacher will create a symbol to represent the word (a drawing of an object or idea), as well as write 2 sentence completions. The teacher will explain the purpose of the symbol is to help students remember the word's meaning. The symbol will go on the index card and the sentence completions will go on the poster chart.
Apply	The teacher will think of a situation or context for using the word. The teacher will model an illustration and the creation of a sentence for the situation.
Present	The teacher will begin by putting the word on the word wall, explaining the color choice, and displaying the definition on the poster chart. Then, the teacher will show her symbol, explain the meaning, and pin it to the left of the word wall. Next, the teacher will display the sentence completion and ask students how to complete the sentence. The teacher will also share the real-life applications of the word.

I also reminded all participants that I was available throughout the study to assist with the implementation. The following week the teachers began to implement the interactive word walls in their classrooms for six weeks.

Observations.

During the implementation of the interactive word wall instructional framework, I collected observational data in each classroom. An observation and field note protocol (Harmon et al., 2009) was also used to triangulate the data (see Appendix G). The protocol focuses on the description of the word wall, instructional use, and adaptations. I

observed the four teachers from August to September. A minimum of six, one-hour field based observations took place. I was an "observer-as-participant," in which I have a peripheral membership in the group/context being observed (Adler & Adler, 1994). During each observation, I took detailed notes illustrating the events of the lesson. In order to schedule the observations, I checked in weekly with the teachers and asked them to let me know when they were using the interactive word wall as part of their lesson.

Quizzes.

Three teacher-developed quizzes were also used to assess specific vocabulary learning of the target words. I assisted teachers in the development of the quizzes. The quizzes included responding to meaningful sentence prompts. Descriptive statistics, including mean and frequencies, were used to analyze the data.

Secondary data sources were also collected in order to aid in the triangulation of the data. Physical artifacts (lesson plans, classroom materials, teacher reflections, and student work) were the data sources used to further examine the links to other data sources.

Phase III

At the end of the intervention, I again interviewed the teachers and the 12 students with parallel questions about their use and understanding of word walls (see Appendix D and E). Post surveys were administered to all students (see Appendix B), as well as the Knowledge Rating Scale (see Appendix C).

The survey (see Appendix B), Knowledge Rating Scale (see Appendix C), interview protocol (see Appendix D and E), observation protocol (see Appendix F), artifact collection, and assessments were designed to investigate the research questions

and facilitate data analysis. Throughout the data collection phase, I engaged in continual reflection and discussion with my colleagues. This process enhanced the accuracy of my accounts during the study. Also, the use of multiple methods and triangulation was an important piece to obtaining an in-depth understanding of the phenomenon under investigation. This adds rigor, breadth, and depth to the study and provides supporting evidence of the data obtained (Creswell, 1998; Denzin & Lincoln, 2000).

Data Analysis

Qualitative researchers begin analysis of data as soon as they enter the field. Analysis, hypothesis creation, testing and interpretation throughout the process of collecting data will ensure thick description (LeCompte & Schensul, 1999). Marshall & Rossman (1999) explain data analysis as "the process of bringing order, structure, and interpretation to the mass of collected data" (p.150). In this study, data analysis involved a close examination of interview transcriptions, classroom observation field notes, pre-post surveys, pre-post Knowledge Rating Scales, and physical artifact data to answer my three research questions. Creswell (2003) explained a process designed to interpret the data: organizing the data for analysis, preparing the data for analysis, studying the data, coding the data for organization, interpreting the data to find descriptive meaning, creating a detailed description of patterns and trends, and interpreting the triangulated data. I engaged in this process by following a sequence of four steps.

The first step included transcribing the individual interviews, observational data, and artifact data within 24 hours so the information will be fresh (Hatch, 2002). All the data from interviews, observations, and collection of artifacts were organized. The data was read line by line a minimum of three times. Coding was initially conducted manually

by reading and rereading looking for important patterns that emerged. I then utilized HyperResearch 2.8.3 (2009) software as a validation of the themes that emerged from the manual coding and linked to the research questions. The software program allows users to notate and code data. This process of open coding (Corbin & Strauss, 2008) took place in order to begin looking at emerging themes and categories within the data. I created a list of preliminary codes (see Table 7) that were used during the first round of data analysis. This allowed me to categorize the common themes and trends.

Table 7

Initial Codes

PERTEACH	Perception- Teacher
PERSTU	Perception- Student
USE/ADATEACH	Use/Adaptation- Teacher
USE/ADASTU	Use/Adaptation- Student
IMPACTEACH	Impact-Teacher
IMPACSTU	Impact-Student

Then axial coding (Strauss & Corbin, 2008) was done in order to intensely code single categories that emerged during open coding. See Table 8 for a detailed list of the codes. Properties of each category were defined, as well as the phenomena that support the category. Once the central categories were determined, the process of selective coding began. During selective coding, core categories were determined and all other categories

were linked with those core categories (Strauss, 1987). All data (interview transcripts, observation transcripts, and artifacts) were compared for each case for significant commonalities and differences.

TABLE 8

Secondary Codes

Code	Description
PERREG	Perception- Regular Word Wall
PERINTWW	Perception- Interactive Word Wall
PERCINI	Perception- Initial Impressions
PERCCOL	Perception- Color
PERSYM	Perception- Symbol
PERSIT	Perception- Situation
PERVOC	Perception-Vocabulary
PERCHAN	Perception- Changes
PERSELF	Perception- Self-selection
PERDIS	Perceptions- Dislikes
IMPACINST	Impact-Instruction
IMPACTEAC	Impact-Teacher

IMPACSTU	Impact- Student
USEPRE	Use-Previous
USETIM	Use-Time
USEMOD	Use- Modeling
USEDIS	Use- Discussion
USEGR	Use-Group work
USEMAT	Use-Materials
USEVIS	Use- Visual
USEORG	Use-Organization
USESTEX	Use- Student examples
ADATE	Adaptations- Teacher

The numerical data derived from the student surveys, Knowledge Rating Scales (Blachowicz & Fisher, 2006) and vocabulary quizzes was used to describe the use and impact of the interactive word wall on student word learning. Descriptive statistics including measures of central tendency and frequencies were calculated in order to present the numerical data in a manageable form (Trochim, 2006). Central tendencies and frequencies were used to indicate trends in the data. Gay and colleagues explained, "Measures of central tendency are indices that represent a typical score among a group of

scores" (p. 307). The central tendency in this study was expressed through mean scores. Frequency was also used to show the number of occurrences within each category. The information was used to determine and support relevant themes that emerged from the qualitative data. This enabled me to gain the deep understanding needed to address each research question. Throughout the analysis process, I continually engaged in discussion with colleagues as well as project consultants. This helped to reduce researcher bias and subjectivity. Member checks were also completed as well, to verify that the researcher's transcripts are accurate.

Interpretation of the data took place in two stages: within-case and cross-case analysis (Creswell, 2007). The first stage considered each content area classroom case as a separate story, or within-case analysis. During this stage, I created summaries of each case in order to describe and interpret the data. I organized topics with themes and used data to support my description and discussion. Looking at the data I collected from each case and focusing on contextually rich variables that may have impacted each case (Merriam, 1998), I worked towards condensing the information into four rich case reports.

The second step of interpretation involved a cross-case analysis across all four cases (individual classrooms) to look for patterns across cases. Cross-case analysis, "a thematic analysis across cases" (Creswell, 2007, p.75) was utilized in order to compare the important statements and categories of data for similarities and differences across all data collected. When a pattern from one data source is corroborated by the evidence from other data sources, the findings are stronger (Yin, 2008). I looked for patterns in the data and grouped codes together in search of larger commonalties within the data.

Trustworthiness

In conducting qualitative research, researchers are concerned with consistency between the data collected and the results. In qualitative research, the credibility, dependability and authenticity are often referred to as "trustworthiness" (Creswell, 2003; Fassinger, 2005; Morrow, 2005). In this study, I am the primary instrument of data collection; therefore, the researcher is at the heart of the analysis (Bogden & Biklen, 1982; Eisner, 1991; Esterberg, 2002; Lincoln and Guba, 1985; Patton, 1990). I employed several measures to enhance trustworthiness: (a) detailed description of the setting, participants, and themes (Creswell & Miller, 2000), (b) the use of multiple sources of data and triangulation of the data (Anderson & Arsenault), (c) performing repeated member checks to assure accuracy and authenticity of data collected and findings, and (d) personal reflexivity throughout the research study (Creswell, 2003; Miles & Huberman, 1994).

Creswell and Miller (2000) explained, "Another procedure for establishing credibility in a study is to describe the setting, the participants, and the themes of a qualitative study in rich detail" (p.126). As the researcher, this helped me conceptualize the places, people and issues. Chapters four and five will provide a detailed description of the setting and participants in order for the reader to have a better understanding of the setting of this study.

Using multiple sources for evidence, or triangulation, will increase the validity of the case study (Anderson & Arsenault, 1998). Triangulation of the data was used to "check the accuracy of findings" (Creswell, 2003, p. 196). Triangulation is the "process of corroborating evidence from different individuals, types of data, or methods of data

collection in descriptions and themes in qualitative research" (Creswell, 2002). I collected a variety of data for this case study (interviews, observations, artifacts, surveys, Knowledge Rating Scales, and assessments) to enhance the accuracy of the findings. Collecting six types of data allowed me to investigate the phenomenon from different perspectives.

Additionally, I conducted member checks in order to ensure that my interpretations were fair and accurate. I did this by sharing all of my data transcripts with my participants in order to make sure I am representing them and their ideas accurately.

I also conducted personal reflexivity throughout the entire research process in order to ensure trustworthiness. Patton (2002) explained reflexivity "has entered the qualitative lexicon as a way of emphasizing the importance of self-awareness, political/cultural consciousness, and ownership of one's perspective" (p.64). During this study, I kept a personal journal in order to reflect on my own belief systems and how they link to this research study.

Summary

Case study research design was used to examine and describe content area teachers and their students' perceptions and use of an interactive vocabulary strategy-an interactive word wall. I played the role of participant-observer throughout the study. This research study was conducted over six weeks during the fall of 2010. My case study included four content area teachers and their students in one urban middle school in the southeastern United States. Each content area (mathematics, science, social studies, and language arts) was represented in the study. I triangulated my data by collecting from different sources: individual interviews, observations, assessments, surveys, Knowledge

Rating Scales and artifacts. Data was analyzed using within-case and cross-case analysis as well as descriptive statistics. The following chapter will discuss the findings of this research study.

CHAPTER 4: RESEARCH FINDINGS

Overview of Results

The purpose of this case study was to examine the effects of an interactive vocabulary strategy on teachers' and students' perceptions of word learning. Yin explained (2009) that the qualitative tradition of the case study provides an ideal design for answering how and why questions. Four classrooms were used for this case study. Data was collected using five different methods that included interviews, observations, surveys, assessments, Knowledge Rating Scales and artifacts. Multiple data collection methods allowed for triangulation of data to increase the validity of the study. Pseudonyms are in place for all individual participants, the school, and the district in order to protect the identity of participants.

The findings are reported in three sections and a summary of the chapter can be found at the conclusion. The first section is devoted to research question 1- *How do specific content area teachers and students perceive interactive word walls as an instructional strategy for enhancing vocabulary learning?* First, student survey results will be presented. Then, teacher and student perceptions will be reported.

The second section addresses research question 2- *How do content area teachers and students use and adapt an interactive vocabulary strategy, the interactive word wall, as a tool for creating a word-rich environment*. First, a detailed description of the classroom context is described in order to provide a context of each individual case. Next, a summary of each case study is presented. Then, cross-case analysis of the four case

studies is synthesized in order to "extrapolate lessons learned" (Patton, 2002, p.500) concerning use and adaptations of the interactive word wall strategy.

The third section provides an analysis to research question 3- *What impact does the use of an interactive vocabulary strategy, the interactive word wall, have on student word learning?* The chapter is then summarized in the conclusion section.

Research Question 1: *How do specific content area teachers and students perceive interactive word walls as an instructional strategy for enhancing vocabulary learning?*

In order to find if students' perceptions of word learning changed, pre and post-Likert surveys were administered to students. Although the survey included twelve questions, the first three questions were directly linked to research question 1: (1) I feel that it is important to have a large vocabulary, (2) I like learning new words, and (3) I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts). In responding to the survey, students were asked to read each statement and consider how well it described their beliefs about word learning. The survey statements consisted of a 5-point Likert scale survey where each item was scored 1 to 5 with response choices of (1) *Never*, (2) *Seldom*, (3) *Sometimes*, (4) *Often*, and (5) *Always*. Pre and post student surveys were coded and analyzed for frequencies and mean.

Language Arts

Tables 9 and 10 illustrate the Likert Scale responses on the pre and post student surveys. Initially, ten students completed the survey, but only nine students completed the post survey due to one student being absent the day of the post survey. The data in Table 9 details students' pre-survey responses regarding their initial perceptions towards word

learning. Table 10 shows the data from the post-survey questions pertaining to students' perceptions towards word learning.

Table 9

Analysis of Pre Student Survey

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
I feel that it is important to have a large vocabulary	3.4	1 (10%)	3 (30%)	5 (50%)	1 (10%)	
I like learning new words.	3.4		6 (60%)	2 (20%)	2 (20%)	
I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts).	3.2		3 (30%)	6 (60%)	1 (10%)	

Table 10

Analysis of Post Student Survey

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
I feel that it is important to have a large vocabulary.	3.4	2 (22%)	4 (44%)	3 (33%)		
I like learning new words.	4	2 (22%)	5 (55%)	2 (22%)		
I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts).	3.3		4 (44%)	4 (44%)	1 (11%)	

Question one asked students if they felt it is important to have a large vocabulary. The mean of scores for this item is 3.4 on the pre and post survey. In the pre survey, students responded to this question with a *sometimes* statement (*f*=5). In the post survey, students responded to this questions with *often* statement (*f*=4). This indicates that when the post survey was administered there was a slight increase in student beliefs about the value of having a larger vocabulary.

Question two asked if students like learning new words. The mean of scores for this item is 3.4 on pre survey and 4 on the post survey. Students responded with *often* on the pre survey (*f*=6) and the post survey (*f*=5). The mean and frequency data suggest a slight increase from the pre to the post survey. The responses suggest students continued to like learning new words.

Question three asked if students think about the vocabulary in their classes (i.e., science, social studies, math, and language arts). The mean of scores for this item is 3.2 on the pre survey and 3.3 on the post survey. Students reported they *sometimes* think about the vocabulary (*f*=6) on the pre survey while post survey indicated *sometimes* and *often* (*f*=4). This shows a small increase in students thinking about vocabulary in their classes from the pre to the post survey.

Social Studies

Tables 11 and 12 illustrate the Likert Scale responses on the pre and post student surveys. Eighteen students completed the pre survey and fifteen students completed the post survey. The data in Table 11 details students' pre-survey responses regarding their initial perceptions towards word learning. Table 12 shows the data from the post-survey questions pertaining to students' perceptions towards word learning.

Table 11

Analysis of Pre Student Survey

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
I feel that it is important to have a large vocabulary.	4	4 (22%)	10 (56%)	4 (22%)		
I like learning new words.	4.3	9 (50%)	5 (28%)	4 (22%)		
I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts).	3.6	3	5	8	1	

Table 12

Analysis of Post Student Survey

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
I feel that it is important to have a large vocabulary.	4.4	8	5	2		
I like learning new words.	4.4	9	3	3		
I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts).	3.1		4	9	2	

Question one asked students if they felt it is important to have a large vocabulary. The mean of scores for this item is 4 on the pre survey and 4.4 on the post survey. Students responded to question 1 with *often* statement (*f*=10) that it is important to have a large vocabulary on the pre survey; the post survey showed *always* (*f*=8). This suggests an increase in student beliefs of having a large vocabulary.

Question two asked if students liked learning new words. The mean of scores for this item is 4.3 on the pre survey and 4.4 on the post survey. The pre survey indicated *always* (*f*=9) and *always* on the post survey (*f*=9). This showed a minimal change in student perceptions of learning new words. Participants still felt they liked learning new words.

Survey question three asked students if they think about the vocabulary used in their classes (i.e., science, social studies, math, and language arts). The mean of scores for this item is 3.6 on the pre survey and 3.1 on the post survey. Students indicated

sometimes on the pre survey (*f*=8) and on the post survey (*f*=9). This indicates a slight decrease from the pre to post survey.

Science

Tables 13 and 14 illustrate the Likert Scale responses on the pre and post student surveys. Fourteen students completed the pre survey and fifteen students completed the post survey. The data in Table 13 details students' pre-survey responses regarding their initial perceptions towards word learning. Table 14 shows the data from the post-survey questions pertaining to students' perceptions towards word learning.

Table 13

Analysis of Pre Student Survey

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
I feel that it is important to have a large vocabulary.	3.5	2 (14%)	8 (57%)	1 (7%)	2 (14%)	1 (7%)
I like learning new words.	3.9	4 (29%)	4 (29%)	6 (43%)		
I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts).	3.1	1 (7%)	3 (21%)	8 (57%)	1 (7%)	1 (7%)

Table 14

Analysis of Post Student Survey

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
I feel that it is important to have a large vocabulary	3.7	3 (20%)	6 (40%)	5 (33%)	1 (7%)	
I like learning new words.	4.5	7 (27%)	2 (13%)	7 (47%)	2 (13%)	
I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts)	2.6		2 (13%)	7 (47%)	5 (33%)	1 (7%)

Question one asked students if they felt it was important to have a large vocabulary. The mean of scores for this item is 3.5 on the pre survey and 3.7 on the post survey. Students indicated *often* on the pre (*f*=8) and post survey (*f*=6). This suggests minimal change in student perceptions regarding the importance of having a large vocabulary.

Question two attempted to find if students like learning new words. The mean of scores for this item is 3.9 on the pre survey and 4.5 on the post survey. The pre survey indicated *sometimes* (*f*=6) and *sometimes* (*f*=7) on the post survey. This suggests a slight increase in students' perceptions of learning new words.

Question three asked if students think about the vocabulary in their classes (i.e., science, social studies, math, and language arts). The mean of scores for this item is 3.1 on the pre survey and 2.6 on the post survey. Students responded with *sometimes* (*f*=8)

and *sometimes* (*f*=7). This indicates a slight decrease in students' perceptions of thinking about the vocabulary in their classes. Overall, there was minimal change in student responses to questions one, two, and three of the student survey.

Math

Tables 15 and 16 illustrate the Likert Scale responses on the pre and post student surveys. Nine students completed the pre survey and eleven students completed the post survey. The data in Table 15 illustrates students' pre-survey responses regarding their initial perceptions towards word learning. Table 16 shows the data from the post-survey questions pertaining to students' perceptions towards word learning.

Table 15

Analysis of Pre Student Survey

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
I feel that it is important to have a large vocabulary.	4.1	5 (56%)		4 (44%)		
I like learning new words.	4	3 (33%)	3 (33%)	3 (33%)		
I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts).	4	4 (44%)	1 (11%)	4 (44%)		

Table 16

Analysis of Post Student Survey

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
I feel that it is important to have a large vocabulary.	3.9	6 (55%)	1 (9%)	2 (18%)	1 (9%)	1 (9%)
I like learning new words.	3.5	3 (27%)	2 (18%)	4 (36%)	1 (9%)	1 (9%)
I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts).	2.6	1 (9%)	1 (9%)	4 (36%)	3 (27%)	2 (18%)

Question one asked students if they felt it was important to have a large vocabulary. The mean of scores for this item is 4.1 on the pre survey and 3.9 on the post survey. Students indicated *often* for the pre (*f*=5) and the post survey (*f*=6). This suggests a minimal decrease in student perceptions towards having a large vocabulary.

Question two asked students if they like learning new words. The mean of scores for this item is 4 on the pre survey and 3.5 on the post survey. On the pre survey, students indicated *always* (*f*=3), *often* (*f*=3), and *sometimes* (*f*=3). On the post survey, students indicated *sometimes* (*f*=4). This also suggests a minimal decrease in student perceptions from the pre to post survey.

Question three asked students if they think about vocabulary used in their classes. The mean of scores for this item is 4 on the pre survey and a mean of 2.6 on the post

survey. Students responded *always* (*f*=4) and *sometimes* (*f*=4) on the pre survey. On the post survey, students responded *sometimes* (*f*=4). This indicates a decrease in students' perceptions from the pre to post survey.

Discussion

The results of the pre and post survey suggest a general positive student perception towards word learning. The mean scores from the pre to post survey did drop for students in the mathematics classroom. This could possibly stem from the fact that the teacher gave the students the survey instead of letting them go outside with their friends. Overall, the ELLs' perceptions seemed to be more favorable than that of the non-ELL students. This could be because achievement in academic vocabulary is crucial for academic success (Carlo, August, & Snow, 2005; Marzano & Pickering, 2005).

Teacher Perceptions

I first report teachers' perceptions of word walls using Harmon and colleagues (2009) interview protocol that is an adapted version of the TEXIN-3 Assessment tool (Hoffman & Sailors, 2004). The teacher interviews took place prior to the professional development aligned to using the interactive word wall instructional framework. To address initial teacher perceptions of a word wall, a pre interview using a picture of a word wall containing only words was used to guide the discussion. The interview protocol included questions about identifying the word wall and talking about its function, use and value. Word walls are collections of words purposefully chosen and visually displayed on a bulletin board or wall in the classroom (Brabham & Villaume, 2001; Kane, 2003). This provides a central location to assist students while independently reading and writing (Brabham & Villaume, 2001). Discussed next will be the three trends

that emerged in the analysis of the pre-interview stage data: (1) Importance, (2) Quality, and (3) Anxieties.

The teachers felt that a word wall would be important for students to learn and retain words. Mr. George, the math teacher, explained the importance of the word wall, "No matter the subject you are teaching you will have words related to that concept that are new for the student, and key words that connect concepts or help students solve situations." He further elaborated that a word wall would be important when introducing a new concept because if students don't know the words and what they mean, then the students will not learn. Ms. Chemical, the science teacher, explained, "It would help students focus on the new vocabulary within a new unit." Ms. John, the social studies teacher, thought the word wall would be an important artifact when introducing a unit with content specific words that would be transferrable to other content areas and grade levels. She explained, "If a child knows what *colony* means in eighth grade and they understand the importance behind it, then hopefully when they hit high school there is transference and they understand the entire *colonization* process." Some teachers also expressed that a word wall might serve as another scaffold for struggling students or students who do not know the language.

Teachers also felt the word wall is a key visual tool for students in the classroom. Ms. Smith, the language arts teacher, thought that a word wall would help students with background knowledge and help them have a visual reference point for things that are in the class read-aloud. She further elaborated that student learning would not take place if there are just a bunch of words on a wall. Ms. Smith expressed the importance of students using and applying words on the word wall.

Quality.

Another major theme that emerged was the quality of the word wall shown during the interviews. The initial word wall included over 100 words. All teachers perceived the initial word wall as low quality due to the amount of words used, and the lack of examples, pictures, or definitions used to guide student understanding. Teachers did not feel that it would be helpful for students to use in the classroom. Ms. Chemical elaborated, “I know students wouldn’t really grasp all those words at one time.” Ms. Smith felt the picture of the word wall was poor quality because it seemed the words were in isolation posted on a board without graphics or sentences to accompany the word. She explained, “The words don’t seem to be in any particular order or category.” She further elaborated, “There is just the word…it’s just a bunch of isolated vocabulary. There are no graphics or sentences to go with the words.” She felt that it would be important to include pictures describing the word, a student-friendly definition of the word, and an example of how you would use the word. Ms. John felt that there was no order in the word wall and too many words on the wall without a clear focus. She expressed, “There is no focal point or clear order... I wouldn’t be able to use it as a student. I would get confused.” Ms. John thought the words should be bigger and used in a context with some organization. All teachers wanted to see the words categorized in some way to assist students with their word learning.

Anxiety.

Teacher anxiety towards implementing the interactive word wall instructional design was yet another theme that emerged. The instructional design included three phases of instruction: introduction, connection, and application. Within each phase, there were several steps that students needed to complete before moving on to the next phase. For example, when student groups were working on the connection phase they would create a symbol to represent the word and provide a rationale for their symbol. Groups would also write a sentence completion using their word. The teachers were nervous about how their students would react to the interactive word wall because there were numerous steps for them to complete. Ms. Smith commented, "I think the first time we do it, the kids are going to struggle with coming up with the picture and student-friendly definition, and they are going to require a lot of our support for it. I think once they get the idea of it and that it is student-driven, I think they are going to like it." Ms. John was uneasy about student independence as they engaged in activities that required higher levels of cognitive processing. Ms. John explained, "I have never done it before. I've always had it made, so this is a different way than me actually showing them how to find the definition, to use the definition, and to use it in context."

Post interviews were conducted to measure teacher perceptions of the interactive word wall strategy. After the completion of the interactive word wall instructional design, I interviewed the teachers using parallel questions about the function, use, and value of the word walls. The word wall is a visible and concrete tool used to facilitate discussions and expand students' use of targeted words (Brabham & Villaume, 2001). When using the interactive word wall strategy, the teacher and students select the most significant terms to

study in-depth. Students first write a student-friendly definition of the word. Students then begin making connections with terms by assigning a color to represent the meaning, a symbol, a context sentence, and an illustration of a situation to further depict the term. Three major themes emerged from the teacher interviews: (1) Value, (2) Engagement, and (3) Challenges.

Value.

All teachers described the interactive word wall instructional design as having value in their classroom. Ms. Chemical expressed, "I found it a lot more helpful with the students' learning and understanding, so I found it more helpful to the teacher. The students really understood the words in order to apply them." Teachers perceived the interactive word wall as an effective tool for enhancing word learning. Ms. Smith explained, "I think it is a good way of doing vocabulary instruction because my students were able to choose vocabulary that was high-frequency and they figured out how to apply the word." Ms. John expressed the purpose was to help students master words, not just memorize words, but to know how to use them. Ms. Chemical further elaborated, "It broke down the words into different sections, like the basic definitions, but it also allowed them to relate it to other things to help them remember it." Ms. Smith said that students were also able to use the dictionary more effectively and construct definitions they would understand for future use.

Mr. George reported that students began using the specific term more often instead of just saying that "thingy" to replace the correct word. He said, "Before students never used the correct terms, they would say that 'thingy', but when we started with the word wall, they were thinking about using the right word." Several teachers also noted the

value a word wall would have for English Language Learners in their class. Ms. John explained, “It gets them (ELLs) immersed.” Moreover, Mr. George commented that the tool would not only be important for his students, but also for himself since he is also an English-Language Learner.

Teachers said that it was an important tool to use when introducing new concepts because it served as a visual reference for the students. Ms. Chemical explained the word wall helped students focus on the new vocabulary within the unit of study. Mr. George reported the word wall was beneficial in reinforcing content specific terms. For example, “When talking about fractions, it’s a common mistake to say the top number and the bottom number. Those two numbers have specific names, and it’s hard when you are trying to teach students the specific term and they don’t understand it…It’s important that they use the right word in the right moment. The visual of the word wall allowed students to refer to the specific term for top number and bottom number of a fraction.”

Student engagement.

Another theme that emerged during the instructional design was student engagement. Since it was interactive and student-driven, teachers said that the interactive word wall helped students retain more words and have a deeper understanding of individual words. Ms. Chemical explained, “I think students were a little more into it because they picked the words they didn’t recognize.” Most teachers explained that students were empowered because they had choice in their learning. Teachers said that they believed that student participation and engagement increased because of the cooperative grouping. Ms. John commented, “The cooperative aspect is good… They were working together. They learned how to come up with stories and ideas together.” Moreover, she explained that the

students were actually on task about 90% of the time working in groups. She felt students were working together to come up with ideas for each phase.

Challenges.

Challenges using the interactive word wall instructional framework was another theme that emerged in the data. Teachers felt that there would be some challenges with implementing and using the interactive word wall instructional design. Initially teachers were a little nervous about the implementation of the interactive word wall because it required a lot of steps. Mr. George explained, “I was insecure about if I was doing the right thing or not because number one we had the pre-training, and then I was doing some stuff I realized I had to correct that stuff that I was doing something not wrong but probably in a different way.” Ms. John explained, “It looked easier on paper than it was to apply in the classroom. I realized I couldn’t do as much as I wanted to. I had to tone it back a little and figure out how to modify it some to pertain to my students.” Ms. Smith expressed her initial concerns, “Worried about the amount of time it was going to take them to get through the steps.” She then commented, “Once they got into the routine, they were able to be pretty independent with it. Once we got through the first time, they understood what they were doing.”

Ms. John felt that because her entire class was made up of English Language Learners (ELLs), they struggled a bit more with the instructional design. The students struggled with not only the vocabulary words used for instruction, but also the individual words used to define the target words. Ms. John’s excerpt illustrates her struggles with using the interactive word wall. “The difficulty I had with it was I was doing it with Ells, and so that was a huge issue. They were open to it, and I give them all the credit in the

word for it, but it was difficult. I think it was very stressful." Ms. John felt that because the words were so history driven it caused more problems for the students to use the words correctly in her class. Her frustrations stemmed from the limited academic vocabulary and background knowledge her students possessed in order to complete the phases of the instructional design.

Another challenge was the time needed to implement the interactive word wall instructional design. In order to complete each phase, students had to complete two to three tasks. Generally, students needed two days, 20 minutes each day, to complete each phase. The interviews revealed teacher concerns over the demands and necessity to cover their curriculum and the amount of time the interactive word wall instructional design would take away from their content. Ms. Chemical explained, "The whole process is time consuming." Moreover, Ms. John expressed, "I would use it, but the problem is the time itself because I only have one hour and I have content I have to cover, too." Although an important tool, most teachers felt that time needed to complete all tasks would not be feasible to use within each unit of study.

Discussion

Looking across pre and post teacher interviews, several themes emerge: (1) Student learning, (2) Student engagement, and (3) Teacher practice. The following section will discuss the themes in detail.

Teachers explained mostly positive perceptions of student learning while using the interactive word wall instructional framework. Teachers said that the interactive word wall was an important strategy to use when introducing new vocabulary to students. It also provided an opportunity for students to move beyond a surface level understanding of

words, to being able to understand and apply the words in meaningful contexts. Teachers did report some challenges in relation to student learning. Some students found it difficult to create situations and accompanying sentences because every word did not fit into a real world situation.

The interview data also suggests that student engagement increased. Throughout the use of the interactive word wall instructional design, structures were in place that increased student independence and thereby increased students' competence of their ability to learn new words. Those structures included student choice over words to study, the ability to work with fellow classmates, and the ability to create their representations of words.

Looking across pre and post interview data, teacher practice changed in relation to vocabulary instruction. Initially, teachers were anxious using the interactive word wall framework because it required a lot of steps and deviated from their typical approach to vocabulary instruction. During the study, teachers became more confident in using the interactive word wall instructional framework. This confidence was portrayed in teachers' modeling of the tasks, as well as facilitating groups during student independent work.

Student Perceptions

Twelve students participated, six Black and six Hispanic, in pre and post semi-structured interview that yielded data related to their perceptions of word walls (see Table 2). Pre and post interviews asked students about the form, function, value and usefulness of a word wall.

In this section, I report the findings of the initial in-depth student interviews. Three trends emerged through analysis of the interviews: (1) General understanding, (2) Benefits, and (3) Quality of the word wall.

General understanding.

The first trend that emerged was a general understanding of a word wall. The students interviewed in this study seemed to demonstrate a general understanding of a word wall. Generally, students explained that a word wall is used to expose the class to words they don't know. Asha explained, "You put vocabulary words up there so students can go back and use them again if they need it." Bionca further elaborated, "A word wall is important because it is another way for you to use proper language, like big words."

Most students interviewed during the initial interview knew that the picture was showing a word wall because several students used one in elementary school to help them with their spelling and writing. Shanissa explained, "In elementary school, we wrote down the words we didn't know in our books and our teacher put them up on the board." Gilberto explained that his elementary teacher used a word wall to help them with their spelling and writing, and she would add new words every couple of weeks.

Benefits.

Out of the 12 interviewees, 10 students felt that a word wall is an important tool in a classroom. The participants seemed quite passionate when discussing the function of a word wall. They felt that word walls are important in learning new vocabulary words and their meanings, it would help them with their reading, it would help in understanding more words in preparation for the End-of-Grade Tests, it would help with their spelling, and it would help them later in life. For example, Linda explained, "Yes, a word wall is important

because you need a big vocabulary in order to get a good job." Davis expressed the importance of using a word wall because you need to know a lot of words in the future. He explained, "You need to learn more words because in the future if you are going out for a job application or in an interview, they would probably expect you to know more proper words instead of using small words." Latoya further elaborated, "If you had a job or something, you want to talk correctly, like proper; you want to use big words so they would know you know something." Students felt that a word wall would not only help them, but also other students in their class.

Quality.

Students were asked about their perceptions of the regular word wall during the pre interview. Although they felt there were too many words on the wall, many students liked the fact that there were words on the word wall they didn't know, and they felt that would be important for them to know in the future. Bionca felt the word wall would help her begin to use different words. She explained, "It's like a better way to replace a word you've known for so long." Most students felt that the regular word wall needed to include definitions, some color, and pictures to go along with the word. Linda explained, "I would have the definition and a picture under the word so you can remember the word." Also, some students felt the word wall had too many difficult words. Many students also wanted to see the word wall arranged in alphabetical order in order to locate a word quickly. Mario stated, "I would change the letters and put them in order from the letter they start with 'cause if the teacher asks you something about the word you can find the section."

All 12 students were also interviewed at the end of the instructional design. During the post interview, students were asked about their perceptions and use of the interactive word wall. Four themes emerged: (1) Differences in the two word walls, (2) Usefulness of the interactive word wall, (3) Choice in selecting target words, and (4) Difficulties completing the tasks of the interactive word wall instructional design.

Differences.

Students were asked to describe their perceptions of a regular word wall containing only words with that of an interactive word wall they created that contained the words, colors, pictures, and symbols to represent word meanings. All students felt the interactive word wall they created with pictures, colors, and symbols was more helpful than a word wall that just had words. Mario explained, "Every day I would walk in and see it (interactive word wall) and then it had picture and it reminded me of what it (the word) means." Tevin further elaborated, "It (interactive word wall) was more fun 'cause you got to color and stuff. The interactive word wall showed the mood of the word with color and a picture of what the meaning of the word is. The other word wall has no color…it's just writing in pencil." Most students expressed that the regular word wall did not explain what the word meant because it only contained the words. Asha expressed, "The interactive word wall helps tell you what the word really means by using the colors and pictures. The regular word wall doesn't." Davis further elaborated, "The regular word wall isn't really that helpful…The interactive word wall has pictures that sort of illustrate what the word means." Bionca explained that having pictures by the word wall helps to describe the word's meaning instead of just having words on the word wall.

Usefulness.

Most students perceived the interactive word wall to be important in helping them learn words. Asha explained, “It helped me define more words and it has built my vocabulary.” Leticia further elaborated, “The interactive word wall helps you understand the meaning of the word and remember it so we can know the words real well.” Some students felt that they had a deeper understanding of the terms when using the interactive word wall instructional design. Latyoa explained, “By looking at the pictures you knew what it really meant. For example if you had a picture of somebody hitting someone you would know that the word was probably *abusive*.” An ELL student from the social studies classroom commented in a reflection, “I like it ‘cause I am learning more words and I am learning more English.” Jesus commented that the interactive word wall was important in helping him learn the history of America. Bionca further elaborated, “Before I didn’t know the words he (math teacher) was saying, and after we used the word wall with colors and drawings, I can remember them.”

The interviewees’ responses indicated the importance of being actively engaged with the interactive word wall. Latoya felt that is was better than “just looking at a vocabulary sheet.” She further explained, “You didn’t just have to look at a vocabulary sheet and have a definition only, you had examples, definitions, and sentences that you could use.” Many students felt linking a color and a picture to the word was easier and it helped with retention of word meanings. This was the first experience students had assigning a color to a word and most students felt that the color helped them to remember the word meaning. Latoya explained, “I never really used colors for the meaning before, and so I liked it because you know the feeling of the word.” Moreover, during the

interviews some students were giving examples of how they related a color to the meaning of certain words, such as associating green with the vocabulary word *premises.*

Most students felt that creating a picture or symbol was the most helpful part of the design because they had a visual to remember the definition. Leticia explained, “It gives us a little clue about what it means.” She explained that picture gives her enough of an idea of the definition to remember what the word means. Moreover, Linda expressed, “It helped me remember more words because I can see what the word means by the picture.” Furthermore, Shanissa explained, “The picture helped give me a mental image of what the word is.” Students also felt that it was useful to work with their classmates and “have fun for a little bit.” Students indicated that they were able to learn from their group members during the instructional design. Leticia explained, **“’**Cause like we get to like, there's people in your group and something you don't know and they know, and they like learn from each other.”

Most students indicated that the interactive word wall was different than their typical vocabulary instruction that consists of copying down words and definitions. Davis explained, “It helped me understand the words a little bit more instead of the teacher just telling us to write the definition.” Shanissa commented, “Yes, it was helpful (interactive word wall) because it helped me understand the words a little bit more instead of the teacher just telling us to write the definition.” Leticia commented that just looking up the words in the dictionary is often insufficient because they do not understand the words in the definition. She explained, “If I normally don’t understand a word, I go to the dictionary and then it gives you a sentence but sometimes you don’t understand it.” Yet another student explained, “Before I didn’t know what the words meant, and after using

the word wall with colors and creations... I can remember them." Shanissa explained, "Instead of just looking over the words or another sheet of paper, it's easier to look at the word wall with all the color and pictures with the word on it."

Choice.

During the post interview, students were asked if they preferred their teacher to select words or they wanted to self-select their own. Most students liked the opportunity to self-select words they didn't know. Gilberto explained, "Picking our own words is better because if I don't understand a word we could pick that one to study." They felt that having choice in picking the words ensured that they were learning words they didn't know. Mario explained, "You might already know the word and the teacher might not know that and she picks it for you to study." Shanissa explained, "Because some of the words she (teacher) picked, we kind of already knew, and the words we picked we didn't really know." She further elaborated, "Picking our words was good because you can see what we really need help with."

Most of the students in the social studies classroom preferred their teacher to pick the words to study. All students in the social studies classroom are English Language Learners. The students possibly believe that their teacher knows the subject-specific words they need to know in order to understand the content.

Difficulties.

Most students felt that creating a sentence for a situation related to the word was the most difficult task, especially the Ells. Leticia stated, "Writing a situation sentence was hard because we barely knew the word enough to write a sentence." Creating a situation sentence required students to apply word meanings in meaningful contexts.

Davis explained, “I couldn’t ever find a situation for the word.” Several students felt that they struggled creating a situation sentence that made sense in context. Shanissa stated, “All the words didn’t sound right in sentences. It’s like hard to write them.” A student from the science classroom explained, “Finding a situation for the word *polarity* was very difficult.”

Discussion

In this section, I report themes that emerged from the pre and post student interviews: (1) Benefits, (2) Student-Centered Environment, and (3) Difficulties. Most students reported the impact that a large vocabulary will have on their future success in life. Students also felt that the tasks they had to complete helped them remember the definitions of the key vocabulary. They expressed this type of instruction was different than their usual task of copying the definition down in their notebook. Their typical vocabulary instruction included rote memorization, dictionary usage and little meaningful use of the words. Conversely, the interactive word wall was contextualized in what students were currently doing in that particular content area.

Most students perceived the interactive word wall as a tool that would help them learn and use more content-area words. A student explained that the colors, shapes, and pictures gave them a clue to the meaning of each word. Another student in particular stated, “It helped me understand the words a little bit more than the teacher just telling us to write the definition.” Students also liked creating symbols for the words. At the end of the six weeks, Ms. Smith asked her Ell students to comment about their feelings using the interactive word wall. Several students felt they learned more words using the interactive word wall. They were also asked to reflect on their experiences using the word wall, and

most of the Ells felt that the word wall helped them to not only learn words, but to use them as well.

Across all four cases, student interview data evidenced a change towards a more student-centered classroom. Concepts related to the student-centered classrooms included student choice in selecting words, group work and collaboration, peer instruction, and peer presentations. The group work allowed students to be involved in the decision-making process and sharing the tasks to be completed. Most students were willing and able to help fellow students who needed more support.

Students reported some issues in completing all tasks of the interactive word wall instructional framework. Some students reported the difficulty of finding a situation that related to their word. For example, finding a situation for using the word *polarity* proved difficult for a student in the science classroom. This further supports Harmon and colleagues' (2008) assertion that content area terms are conceptually important, represent complex ideas, and are unfamiliar to students.

Student survey data provided additional insight into student perceptions of vocabulary. The student survey results from the language arts classroom revealed a slight increase in their responses from the pre to post survey. In the social studies classroom, student survey responses increased in their beliefs about the importance of having a large vocabulary and the importance of learning new words, but showed a slight decrease in thinking about the vocabulary used in their classes. The survey results from the science classroom revealed minimal change from pre to post survey responses. The data suggests that students continued to feel that vocabulary is important. Survey results in the math

classroom decreased from the pre to post survey. This variation between the math classroom and the other three classrooms is suggestive and bears further study.

Within-Case Analysis

I begin this section by describing each individual classroom case in detail. Each summary is structured as follows: I start by introducing the common time period teachers chose to use the interactive word wall instructional design. Next, I introduce each teacher and his or her students. Then, I turn to the overarching research question guiding this study- *How do specific content area teachers and students use and adapt an interactive vocabulary strategy, the interactive word wall, as a tool for creating a word-rich environment?* Using evidence from observations, interviews, surveys, Knowledge Rating Scales, assessments and artifacts, I present the findings within each case. Each of the following four case descriptions identifies how each teacher specifically incorporated the interactive word wall instructional framework within their subject area. Further, I report student perspectives within each individual case. Finally, I provide a general discussion across four cases.

All teachers chose to use the interactive word wall during their remediation period. This 30 minute period is typically devoted to student remediation or sustained silent reading. Students do not get a grade for this class period, so some students' motivation to complete the interactive word wall tasks were limited. This seemed to only impact one particular class- the math classroom. Mr. George explained that he initially liked using the interactive word wall instructional framework during the remediation period, but he now believes that it should be used during instructional time in order to

have more of an impact on student word learning. The second section highlights commonalities across the four cases.

Classroom One: Language Arts, Ms Smith

Classroom one is the language arts classroom. Ms. Smith is a White female who has been teaching middle school for 11 years. She has a degree in secondary education and a Masters in Curriculum and Instruction. She started her teaching career at Johnson Middle School. During the 2009-2010 school year, Ms. Smith was named *Teacher of the Year* at the school and a finalist for the county award. She has great rapport with her students and their families. For the past three years, she has taught one single-gender section class of boys. The class that participated in this study was the single-gender boys class. Ms. Smith chose this class because she felt they would benefit most from the strategy and the class size was smaller than her other classes. Six of the ten boys have been in a single-gender class for the past two years.

I collected student demographic data using North Carolina Window of Information on Student Education, North Carolina End-of-Grade Test data, and student interview data. Ten boys are enrolled in this classroom- four Black and six Hispanic. The boys range in age from 12 to14. The average reading scale score for the class was a 350, which is considered a level 2 on the NC Reading EOG. According to North Carolina Department of Public Instruction (2008), students scoring below a level 3 do not have sufficient mastery of grade-level subject matter and skills.

The physical setting of the classroom was student-centered, including groups of four desks arranged throughout the classroom. There is a classroom library full of a variety of genres for student use. There are a variety of materials available for student use, including markers, paper, colored pencils, and pens. The classroom also has a couch and several bean-bag chairs for students to use during their independent reading time.

During the first teacher interview, Ms. Smith explained that she had previously used a word wall in her classroom. She commented that it was the "old school vocabulary type instruction" and it was done in "isolation." She explained that she selected the words and put them on the wall each week. She chose words based on what students were reading that week. It was done to meet the requirements set by her principal and district, so teachers and students had little ownership over the word wall.

During the initial planning phase, Ms. Smith decided to use the word wall as part of exposing students to background knowledge they needed to understand their read-aloud text, *Touching Spirit Bear.* She felt that students were unfamiliar with a lot of the vocabulary related to the characters and setting of the novel. She stated, "The book talks about Native American justice and Alaska. They are totally unfamiliar with what it would be like in Alaska." Therefore, during the first four weeks, students worked with informational articles related to the novel. During weeks five and six, Ms. Smith decided to use character traits as targeted words for instruction. Throughout their character unit of study, students expressed difficulty in trying to describe their characters and understand different words used to describe characters in their novel. When working with this set of words, students initially highlighted words they did not know form a character trait handout. Students then classified the words as positive, negative or neutral, and then tried to define the word. For example, a student classified the word 'brave' as a positive trait and then defined it as "you are not scared to do it." Once students completed this task individually, they then worked with their partner to decide on two words that were the most important to learn.

In order to scaffold the phases of instruction, Ms. Smith chose to give each pair one word that she selected and then they chose one word from the reading for the first set of words. She felt that it was important to scaffold the framework for the students in order to ensure proper implementation. The first set included twelve words and the subsequent sets included ten words each. During the second and third set of words, Ms. Smith had the students self-select all of their words.

To begin the interactive word wall instructional framework during week one, Ms. Smith gave each student a blue folder in which they kept all of their word wall materials during the study. This was an important step in ensuring all students had their needed materials each day. She spent some time talking and modeling how to select words using questions from Beck and colleagues (2002) and Graves (2006) using another informational article related to the read-aloud.

Ms. Smith used a document camera to model how to highlight words they do not know and to complete the self-selection chart. Using their self-selection word chart, students read "Tlingit Indian Fact Sheet" and tried to find two words they did not know. Some students were choosing a person's name to put on their self-selection chart, so Ms. Smith stopped the class and modeled why choosing a person's name would not be something you need to know in different contexts. Students then were paired up to discuss their words and come to a consensus on a word they felt was important to study. Then, each pair discussed why they felt their word was important for the entire class to know. Next, Ms. Smith gave each pair a sticky with a word she self-selected for them from the article. The class worked on the following words to complete the phases of the instructional design: *substantial, warfare, diminished, justice, political, sovereignty,*

accountability, elaborate, and *mechanism.* Ms. Smith used *imbalance* and *tradition* to model all steps of the instructional design.

To begin the next phase, Ms Smith used her two words to model the steps, as well as provide a visual reference during students' independent work. First, she wrote the word on the note card and the group poster chart. She chose a color that related to the word and then colored the card with the color. She also wrote a rationale on the back of the note card explaining why she chose the particular color. On the poster chart, she wrote at least two ways to define the word.

Pairs were given a variety of resources including a set of note cards, markers, chart paper, color sheet and dictionaries to use. Ms. Smith also set up a schedule for pairs to use her computer so they could access Merriam Webster's Word Central (http://wordcentral.com) to find more student-friendly definitions. For the word *elaborate,* a pair chose the color gold because they felt it represents something wealth. Another group chose the color grey for the word *mechanism* because they felt a lot of machines are grey in color. One pair showed initial hesitancy toward the assignment, but as soon as Ms. Smith walked them through the assignment by using her example they seemed comfortable in completing the task. The teacher moved around the room facilitating the activity, answering questions, and redirecting students as needed. Each pair then presented their words to the class by providing the correct pronunciation, the definitions, color and rationale for the color. Students then placed their two note cards in a designated space around the room. After each phase, students would then place their materials under their note cards.

For the next set of tasks, Ms. Smith modeled creating a symbol to represent the word and wrote two sentence completions. For example, she chose a seesaw with an adult sitting on one side and a child on the other to represent the word *imbalance*. Students worked with their partner to complete the tasks and then presented the information to the entire class. The students appeared to listen to each pair's presentation because they were taking notes. Ms. Smith did not have students complete the final phase of the instructional framework with the first set of words. For the second and third set of words, pairs did complete the situation pictures and the accompanying sentence.

For the second set of words, each pair worked with two words to complete all tasks. Ms. Smith did not guide students in the self-selection of their words. She wanted to see their thought process in choosing words. The class chose the following words to study in-depth: *fiber, ceremony, erect, missionary, accompanied, debt, crest, totem, cinnabar,* and *signify*. Students completed the first two phases, introduction and connection, with very little assistance from Ms. Smith. One group chose to link the color red with *totem* because it represented family to them. Yet another group chose to link the color green with *debt* because it represented money.

She then introduced the application phase of the instructional design. Ms. Smith modeled for students how to think of a situation for using the word, and then draw a picture about the situation with an accompanying sentence. One group, working on the word *totem*, drew a picture of a family totem pole and created the following situation sentence, "This *totem* pole represents my family and our traditions."

By the time students worked with the third set of words, almost all students felt comfortable with the tasks. Ms. Smith chose character trait words for the students to self-

select words they felt were important to study in-depth. The class chose the following 10 words: *timid, boastful, gorgeous, melancholy, lively, perfectionist, manipulative, keen, dainty,* and *eager*. Most pairs decided to divide up their words so that each person worked on one word.

Throughout my observations, I noted that there was a comfortable flow in the classroom because students felt at ease working with a partner and asking the teacher for help when necessary. Ms. Smith seemed to have a comfortable rapport with the students. Students also seemed to have a great rapport with each other. Students initially had numerous questions about the steps they needed to complete each day. They needed constant reassurance from Ms. Smith that they were completing each phase correctly. Students also struggled, at times, creating sentence completions and their situation sentences. Both tasks required students to apply their learning that moved beyond a definitional level of word learning. By week three students were self-sufficient with each phase of the instructional design. At the end of the study, students were asked to reflect on their experiences using the interactive word wall. Most students were positive about their experience using the interactive word wall. Mario commented, "It helped me learn words that I didn't know." Tevin explained, "It helped me out with words and how to use them in sentence."

Adaptations.

Ms. Smith decided to make some adaptations to the original word wall instructional design in order to meet the needs of her students. First, students worked on a set of words for eight days instead of following the original instructional design of five days. Due to lunch, the time assigned to work on the interactive word wall was only

around twenty minutes each day, so Ms. Smith felt it was important to give students enough time to properly go through each phase of the instructional design. Secondly, the small class size (10 students) provided an opportunity for students to work in pairs instead of small groups of three to four, as originally planned during the professional development. Each individual student highlighted words they did not know and completed the self-selection word chart, and then they worked with a partner to discuss the words and decide on two words they would work on during the instructional design. Putting students in pairs instead of groups provided a chance to expose the entire class to more words during each set.

Another adaptation focused on type of text used during the design. Students self-selected words from informational articles related to the class read-aloud for the first two sets of words. Then, Ms. Smith noticed that students were having difficulty describing their characters in class, so she decided to use character trait words for the last set of words. After the completion of study, Ms. Smith continued to use the character trait words to further develop and expand students' vocabulary.

Ms. Smith also decided to have pairs present their work after each phase of the instructional design. For example, after students completed the first set of tasks: writing the word, defining it, and choosing a color, they presented the information to the class. This was an important step in ensuring all students were given multiple opportunities to see and use all words.

The interactive word wall was initially spread out all over the room after completing the first set of words. Each pair had a designated spot in the room for their word and the accompanying materials. Ms. Smith decided to move the interactive word

wall to a central location in the back of the room after beginning the second set of words. The word wall had each word, symbol, and situation. Group poster charts were also located under the terms. All the words used during the instructional design stayed up for the entire six weeks of the study. Each set of words were added to the word wall throughout the instructional design.

Student perspective.

To further investigate teacher and student use of the interactive word wall, I am revisiting the survey data. Each statement measured students' perceptions of the use of the interactive word wall within their classroom. Specifically, questions four through twelve will be discussed in this section. Ten students completed the pre survey and nine completed the post survey. The survey statements consisted of a five-point Likert scale: (1) *Never*, (2) *Seldom,* (3) *Sometimes,* (4) *Often*, and (5) *Always*. Tables 17 and 18 detail pre and post-survey responses regarding the use of the interactive word wall in their classroom.

Table 17

Analysis of Pre Student Survey: Language Arts

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
My teacher uses a word wall in the classroom.	1.7		1 (10%)	2 (20%)		7 (70%)
I use the words from the word wall.	1.2		1 (10%)	1 (10%)	1 (10%)	7 (70%)
My teacher selects the words for the word wall.	1.6			3 (30%)		7 (70%)
I have opportunities to self-select words for the word wall.	1.6			3 (30%)		7 (70%)
My teacher refers to the words on the word wall every day.	1.7		1 (10%)	2 (20%)		7 (70%)
My teacher connects new words on the word wall to words that I already know.	1.7		1 (10%)	2 (20%)		7 (70%)
I have opportunities to work in groups to discuss words from the word wall.	1.5		1 (10%)	1 (10%)		8 (80%)
I have multiple opportunities to work with and use words from the word wall.	1.5			2 (20%)	1 (10%)	7 (70%)
The word wall in my classroom has colors and pictures.	1.4			2 (20%)		8 (80%)

Table 18

Analysis of Post Student Survey: Language Arts

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
My teacher uses a word wall in the classroom.	4	4 (44%)	2 (22%)	2 (22%)	1 (11%)	
I use the words from the word wall.	3	1 (11%)	1 (11%)	4 (44%)	3 (33%)	
My teacher selects the words for the word wall.	1.8		1 (11%)	2 (22%)	1 (11%)	5 (56%)
I have opportunities to self-select words for the word wall.	4.2	5 (56%)	1 (11%)	3 (33%)		
My teacher refers to the words on the word wall every day.	2.6		3 (33%)	1 (11%)	3 (33%)	2 (22%)
My teacher connects new words on the word wall to words that I already know.	2.3		2 (22%)	2 (22%)	2 (22%)	3 (33%)
I have opportunities to work in groups to discuss words from the word wall.	4.6	6 (67%)	2 (22%)	1 (11%)		
I have multiple opportunities to work with and use words from the word wall.	4.2	3 (33%)	5 (56%)	1 (11%)		
The word wall in my classroom has colors and pictures.	5	9 (100%)				

Question four asked students if their teachers used a word wall. The mean of scores for this item is 1.7 in the pre survey and 4 on the post survey. On the pre survey, students responded *never* (*f*=7). On the post survey, they responded *always* (*f*=4).

Question five asked students if they used words from the word wall. The mean of scores for this item is 1.2 on the pre survey and 3 on the post survey. They responded *never* (*f*=7) on the pre survey and *sometimes* (*f*=4) on the post survey.

Question six asked students if their teacher selects the words from the word wall. The mean of scores for this item is 1.6 on the pre survey and 1.8 on the post survey. Students indicated *never* (*f*=7) on the pre survey and *never* (*f*=5).

Question seven asked students if they had opportunities to self-select words for the word wall. The mean of scores for this item is 1.6 on the pre survey and 4.2 on the post survey. Students responded *never* (*f*=7) on the pre survey and *always* (*f*=5) on the post survey.

Question eight asked students if their teacher refers to the words on the word wall every day. The mean of scores for this item is 1.7 on the pre survey and 2.6 on the post survey. Students indicated *never* (*f*=7) on the pre survey. Students indicated *often* (*f*=3) and *seldom* (*f*=3) on the post survey.

Question nine asked students if their teacher connects new words on the word wall to words that they already know. The mean of scores for this item is 1.7 on the pre survey and 2.3 on the post survey. Students responded *never* (*f*=7) on the pre survey and *never* (*f*=3) on the post survey.

Question ten asked students if they have opportunities to work in groups to discuss words from the word wall. The mean of scores for this item is 1.5 on the pre

survey and 4.6 on the post survey. On the pre survey, students responded *never* (*f*=8). On the post survey, students indicated *always* (*f*=6).

Question eleven asked if students have multiple opportunities to work with and use words from the word wall. The mean of scores for this item is 1.5 on the pre survey and 4.2 on the post survey. Students indicated *never* (*f*=7) on the pre survey and *often* (*f*=5) on the post survey.

Question twelve asked students if the word wall in their classroom has colors and pictures. The mean of scores for this item is 1.4 on the pre survey and 5 on the post survey. Students responded *never* (*f*=8) on the pre survey and *always* (*f*=9) on the post survey. Overall, the survey data indicates that teacher and student use of the interactive word wall increased over the instructional design period.

The items that generated the highest response of *always* were the ones pertaining to self-selection of words, cooperative opportunities, and multiple opportunities to work with the words, and colors and pictures used on the word wall. The questions that received the least agreement were related to the teacher selecting words for the word wall, referring to the word wall every day, and connecting new words on the word wall to words students already know. The survey data further supported the observation and interview data in which students had opportunities to select their words, work in groups, and had numerous opportunities to work with their words.

Discussion.

Ms. Smith's understanding of how the interactive word wall could impact student vocabulary learning changed during the study. Her previous use of a word wall was teacher-driven and in isolation, with very little opportunity for students to work with and

use the words. By the end of the study, students had multiple opportunities to work with and use words as well as work with a classmate to facilitate their understanding of the words.

Ms. Smith also spent a great deal of time initially planning and organizing the use of the interactive word wall strategy. Her planning seemed to ease the student's transition into using the interactive word wall. Ms. Smith's modeling and scaffolding enabled students to complete tasks that ultimately led to greater student learning. This is supported by the mean of scores from the first quiz to the last quiz, which increased 18 points. A student can accomplish a skill with the aid of adult or peer that he may not be able to do on his own, and the support can be removed when no longer needed (Greenfield, 1999). This scaffold helped supports students use and understanding of the interactive word wall strategy.

Another important theme that emerged was the selection of words to study in-depth. Ms. Smith's focus for word selection was based on the students' needs. The boys indicated their struggles with understanding and using character trait words. Therefore, she the focus of word selection for the remainder of the study would be character words.

Student independence also improved throughout this study. For instance, students initially had numerous questions and concerns using the interactive word wall. Students' perceptions of their ability to complete the tasks improved throughout the study. Student independence was supported by the structures that Ms. Smith had in place in her classroom. For example, she provided the needed materials for students to complete all tasks as well as examples of how to complete the tasks. Therefore, students were able to become self-sufficient in completing the tasks required in each phase. Students

understanding of how to self-select words to study in-depth increased. Students became more metacognitive with their thinking of word selection by selecting words that were useful and frequently found across multiple contexts.

Classroom Two: Social Studies, Ms. John

Classroom two is the social studies classroom. This is Ms. John's 14th year of teaching. She has taught History, Global History, Geography, and World History before coming to Johnson Middle School. She was also an Associate Professor for New York City Public Schools for two years. Although Ms. John has been teaching at the school for four years, this is her first year teaching American History at the middle school level. This is also her first year teaching an entire class of English Language Learners (Ells). She is well respected among faculty and students at Johnson Middle School. Ms. John holds high expectations for her students and holds them accountable for their work and behavior. Her personality is strong and she is able to gain the attention of her students in a moment's notice. During the interview, Ms. John explained that she previously used a word wall, but it was pre-made for the students and she used it as a point of reference for the students during a unit of study.

Mrs. John chose the Sheltered Instruction Observation Protocol (SIOP) (Echevarria, Vogt, & Short, 2004) class to use the interactive word wall because she felt they would benefit the most from learning and working with words. All the students in the class are native Spanish speakers. This class is a sheltered instruction class that provides a safe environment for ELLs to learn content and not feel threatened by their native English speaking peers. The SIOP framework teaches subject matter content while simultaneously supporting students' English language development (Echevarria, 2007).

Although Ms. John taught Ells before, this is her first year teaching an entire class of students with limited English language proficiency.

I collected student demographic data using North Carolina Window of Information on Student Education, North Carolina End-of-Grade Test data, and student interview data. The student participants included 21 students, seven of whom were boys and 14 were girls. Only one student did not return the informed consent letter. During the instructional design, four new students became part of the class. The four students had very limited English skills, so they participated in the weekly activities, but did not take the quizzes or complete the Knowledge Rating Scale at the end of the instructional design. The average EOG Reading Score is a 343, which is considered a Level 1 according to NC DPI. Students performing at this level do not have sufficient mastery of knowledge and skills in this subject area to be successful at the next grade level (NC DPI, 2008). The average EOG Mathematics Score is a 351, which is considered a Level 2 according to NC DPI (2007). Students performing at this level demonstrate inconsistent mastery of knowledge and skills in this subject area and are minimally prepared to be successful at the next grade level (NC DPI, 2007).

The physical setting was a traditional classroom setting with student desks organized in rows of three to four desks. The room was decorated with current events and social studies themes. As this study progressed, there was an increase in print due the word walls being posted in the classroom. Throughout the weeks of the instructional design, Ms. John moved from group to group as needed and redirected students as necessary.

The first lesson introducing the interactive word wall was tied to an article entitled, “She’s the Real Deal,” in which a woman is coaching a boys’ high school football team in the United States. For homework, students read the article and highlighted words they did not know. For the next class, students chose three words from the highlighted words that they wanted to learn more about. They then completed the self-selection word chart. Then, Ms. John assigned the groups to heterogeneous triads, and each student discussed their words with the group. Within one group in particular, two students argued over which word they felt was more important for the entire class to learn. A student explained, “I think *jubilant* is more important because you can use it around adults.” They ended up choosing *jubilant* because another group had chosen *frenzy*. The class chose the following words to study in-depth: *renowned, frenzy, environmental, merited, testosterone and jubilant.* Students then worked on defining the word, connecting a color and symbol related to the word. Ms. John gave students oral directions, but did not model how to complete the steps. A few groups seemed to have a trouble getting started on the assignment. Ms. John assisted each group with selecting a color connected to their word. Students also defined their word in at least two ways on their group poster chart. Ms. John provided bilingual dictionaries to assist students.

For the next set of tasks, students completed a symbol to represent their word and wrote a sentence completion. Ms. John walked around and assisted groups that were struggling to create a symbol and/or a sentence completion related to their word. This lesson was challenging because groups struggled with creating sentence completions for the rest of the class to complete. Therefore, Ms. John and I decided to create sentence completions that groups could use to create their own ending to the sentence. This

seemed to ease their comfort level during that particular phase. Student groups used the one created by the teachers, as well as created an additional sentence starter. For example, using the word *jubilant* she created the following sentence completions:

The class was *jubilant* when (we were told we had no homework tonight).

There were crowds of *jubilant* people (when Spain won the World Cup).

The group then came up with the following sentence completions for the word *jubilant*: "I was *jubilant* because…." "The coach will feel *jubilant* because their team…" With the examples and assistance from Ms. John, most groups completed more than one sentence completion to share with the class. At the end of class, students presented their word, color, symbol and sentence completion to the rest of the class. Ms. John explained that the presentations were important for students to continue to work on their language skills. After presentations students posted their word, symbol, and the group poster chart around the back of the room. Ms. John had students put their individual group poster chart up as well. The word wall remained up during the entire study and students continued to add words to it each week. During the first two weeks, students did not illustrate a situation with an accompanying sentence. Ms. John felt that students were already struggling to write a sentence completion, so she did not want them to feel pressured to complete the situation sentence.

For the second and third set of words, Ms. John picked the content specific words for the students. She explained that students must understand those words in order to have a grasp of the content that was being presented in class. Ms. John also gave the definitions to the students as well. She felt that it was important for students to have the "correct definition." For four days students worked on their color choice, symbol,

sentence completion, situation and sentence. The second set of words included the following words: *premises*, *apprentice*, *native* and *fertile*. For the word *fertile*, one group defined the word by explaining it as *producing* and *having enough nutrients to grow*. Their symbol included grass with a bunch of fruits and vegetables. Their sentence completion was about how *fertile* the land was for the people. For the situation, the group drew a picture of land that was bare. Their accompanying sentence explained that the dirt was not fertile because it could not produce vegetables. Once groups had completed all tasks, they presented the information to the class. They began by explaining their student-friendly definition and color choice. The group then explained their symbol and sentence completion. They then shared their situation and accompanying sentence.

Ms. John gave students their third set of words based on the time period they were studying in class. The third set of included the following words: *legislature*, *democracy*, *Mayflower Compact*, and *House of Burgesses.* Students seemed to easily complete all tasks of the instructional design, with the exception of creating an accompanying sentence for the sentence completion. Some groups were struggling with correctly using *House of Burgesses* and *Mayflower Compact* in a situation sentence. For homework that week, students completed a word search and crossword puzzle. The homework assignment was what Ms. John normally gave to her students during a unit of study.

The following week, Ms. John decided to have the students use the words from set two to write a story related to their current topic of study, similar to a Mad Lib. Ms. John required all groups to use the colonies during the 1700s as the setting so that it connected their current topic. For example, “The slaves in the 1700s were not *native* to the southern colonies because they were originally from Africa. The white men were

skilled traders which are called *apprentices*." Some groups continued to think that an *apprentice* was a specific person, or they used it to explain a person who was very skilled or trained. Since this was found in most groups, Ms. John stopped the class and used that as a teaching point to give examples of how *apprentice* might be used in the story.

The following week students added the third set of words to their story. Some groups were struggling with correctly using *House of Burgesses* and *Mayflower Compact* in their story. Most of the stories were funny and included students in the class. Students spent one day rehearsing their story presentation. All groups were given the opportunity to choose one group member to read aloud their story. During presentations, a non-English speaking female student chose to read a small part of the story in front of the class. This is important to note because it suggests the student is becoming more comfortable with the classroom environment and her English-speaking skills. All groups demonstrated participation in all tasks of the interactive word wall instructional design.

Adaptations

Ms. John had to adapt the original plan created during the professional development time because her class consisted of all ELLs. She felt that what initially would only take one week ended up taking two weeks. The first set of words was self-selected by students using an article they were reading in class. For the last two sets of words, Ms. John gave each triad one word related to their topic of study in social studies. She felt the terminology was necessary to understand the content knowledge. Also, Ms. John gave students the definition for the content-specific words because she wanted to ensure they had the correct definition.

Based on student struggles with the first set of words, Ms. John also decided to only have the class work with four target words for sets two and three. Therefore, more than one group worked on a word. Ms. John felt the words used for sets two and three required a historical background, so it would be beneficial to have more than one group working on each word. This also seemed to ease each student's worries about their performance on the quizzes.

Another adaptation to the instructional design was the omission of creating a situation and writing a sentence to accompany the situation for the first set of words. Ms. John felt that her students were already struggling to complete the other tasks. Therefore, it would have been too overwhelming for them to complete during the first two weeks.

Ms. John also used the last two weeks for students to create a story using words from sets two and three. She felt that the students were overwhelmed with the new vocabulary, and it would be better for them to continue using their new words in a different context instead of giving them more words to study in-depth.

Student Perspective.

To further investigate teacher and student use of the interactive word wall, I am revisiting the survey data. Each statement measured students' perceptions of the use of the interactive word wall within their classroom. Specifically, questions four through twelve will be discussed in this section. Seventeen students completed the pre survey and fifteen students completed the post survey. The data in Tables 19 and 20 detail students' pre and post-survey responses regarding the use of the interactive word wall in their classroom.

Table 19

Analysis of Pre Student Survey: Social Studies

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
My teacher uses a word wall in the classroom.	1.3			1 (6%)	3 (18%)	13 (76%)
I use the words from the word wall.	1.6		1 (6 %)	3 (17 %)	2 (11%)	12 (67 %)
My teacher selects the words for the word wall.	1.6		1 (6%)	2 (11%)	3 (17%)	12 (67%)
I have opportunities to self-select words for the word wall.	1.7	1 (6%)	2 11%)	1 (6%)	1 (6%)	13 (72%)
My teacher refers to the words on the word wall every day.	1.5			3 (18%)	2 (11%)	12 (71%)
My teacher connects new words on the word wall to words that I already know.	1.9	1 (6%)	2 (11%0	2 (11%)	2 (11%)	11 (61%)
I have opportunities to work in groups to discuss words from the word wall.	1.4		1 (6%)	1 (6%)	3 (17%)	13 (72%)
I have multiple opportunities to work with and use words from the word wall.	1.2			2 (12%)		15 (88%)
The word wall in my classroom has colors and pictures.	.8				3 (17%)	15 (88%)

Table 20

Analysis of Post Student Survey: Social Studies

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
My teacher uses a word wall in the classroom.	4.1	5 (33%)	6 (40%)	4 (27%)		
I use the words from the word wall.	4.1	5 (33%)	7 (47%)	3 (20%)		
My teacher selects the words for the word wall.	3.3	1 (7%)	4 (27%)	9 (60%)	1 (7%)	
I have opportunities to self-select words for the word wall.	3.8	4 (27%)	4 (27%)	7 (47%)		
My teacher refers to the words on the word wall every day.	3.7	3 (21%)	4 (29%)	7 (50%)		
My teacher connects new words on the word wall to words that I already know.	2.9	2 (13%)	1 (7%)	6 (40%)	6 (40%)	
I have opportunities to work in groups to discuss words from the word wall.	4.1	11 (73%)		1 (7%)		3 (20%)
I have multiple opportunities to work with and use words from the word wall.	3.6	2 (13%)	5 (33%)	8 (53%)		
The word wall in my classroom has colors and pictures.	4.9	14 (93%)	1 (7%)			

Question four asked students if their teacher used a word wall. The mean of scores for this item is 1.3 on the pre survey and 4.1 on the post survey. During the pre survey, students indicated that their teacher *never* used a word wall (*f*=13). Students indicated on the post survey that their teacher *often* uses a word wall in the classroom (*f*=6).

Question five asked students if they use words from the word wall. The mean of scores for this item is 1.6 on the pre survey and 4.1 on the post survey. According to the pre survey, students reported that they *never* use words from the word wall (*f*=12). After implementation, students reported they *often* use words from the word wall (*f*= 7).

Question six asked students if their teacher selects the words for the word wall. The mean of scores for this item is 1.6 on the pre survey and 3.3 on the post survey. Students reported on the pre survey that *never* (*f*=12) have opportunities to self-select words compared to the post survey results of *sometimes* (*f*=9).The responses further indicate that Ms. John did let the students choose their words at times and she chose them sometimes.

Question seven asked students if they had opportunities to self-select words for the word wall. The mean of scores for this item is 1.7 on the pre survey and 3.8 on the post survey. Students reported that they *never* (*f*=7) get the opportunity to self-select words. The post survey results indicate that students *sometimes* (*f*=7) have an opportunity to self-select words for the word wall.

Question eight asked students if their teacher refers to the words on the word wall. The mean of scores for this item is 1.5 on the pre survey and 3.7 on the post survey. Students reported their teacher *never* (*f*=7) refers to the words on the word wall on the pre

survey. The post survey results indicate their teacher *sometimes* (f=7) refers to the word wall.

Question nine asked students if their teacher connects new words on the word wall to words that they already know. The mean of scores for this item is 1.9 on the pre survey and 2.9 on the post survey. Students reported they *never* (*f*=11) on the pre survey and *sometimes* (*f*=6) and *seldom* (*f*=6) on the post survey.

Question ten asked students if they have the opportunity to work in groups to discuss words from the word wall. The mean of scores for this item is 1.4 on the pre survey and 4.1 on the post survey. On the pre survey, students reported they *never* (*f*=13) have opportunities to work in groups. On the post survey, students reported that they *always* (*f*= 11) have opportunities to work in groups to discuss words from the word wall.

Question eleven asked students if they have multiple opportunities to work with and use words from the word wall. The mean of scores for this item is 1.2 on the pre survey and 3.6 on the post survey. Students also reported that they *never* (*f*=15) have opportunities to work with and use words from the word wall on the pre survey, and then reported they *sometimes* (*f*=8) have opportunities to work with and use the words.

Question twelve asked students if the word wall in their classroom has colors and pictures. The mean of scores for this item is 0.8 on the pre survey and 4.9 on the post survey. On the pre survey, students indicated the word wall in their classroom *never* (*f*=15) has colors and pictures. On the post survey, students indicated the word wall in their classroom *always* (*f*=14) has colors and pictures.

The survey data that showed the largest increase was teacher and student use of a word wall, working in groups, and using colors and pictures for the word wall. Students

also indicated that they sometimes have opportunities to self-select words for the word wall. This further supports the interview and observation data that revealed a combination of teacher and student selection of words to study. The survey questions that received the least agreement were related to the teacher connecting words from the word wall to words they already knew and referencing the word wall every day.

Discussion.

Ms. John likes structure, routine, and control in her classroom. It seems that because the interactive word wall gave more control to the students she struggled, at times, moving along with the implementation. Initially, she did let the students choose their words, but as the weeks progressed she ended up choosing all of the target words for the students. During the post interviews, the students reported they liked Ms. John picking their words for them. Since the words that she chose were content specific, Ms. John also chose to give the students the definitions that she felt they needed to know. Towards the end of this study, she also reverted back to her usual vocabulary activities--crossword puzzles and word search. This is probably because she felt more comfortable with those activities.

Based on students' initial struggles with the tasks, Ms. John began to model each task for students. The teacher modeling was important in explicitly teaching students how to complete the tasks and a scaffold for student learning. Ms. John also provided a necessary visual of each task to guide students during their independent work. This was an essential component in helping students understand how to complete each individual task.

During the implementation of the interactive word wall, most students perceived the word wall as beneficial in helping them learn new vocabulary. Although students struggled at times to complete the tasks, they willingly tried to attempt all aspects of the interactive word wall instructional design. Several students reported the importance of working in groups to help them understand and use the vocabulary. In the reflection section of the third quiz, students also commented that the interactive word wall helped them learn words because they could use the visual of the word wall to help them remember the definition. They also expressed the importance of having more time to learn the words in depth.

Classroom Three: Science, Ms. Chemical

Classroom three is the science classroom. This is Ms. Chemical's ninth year teaching, eight years teaching seventh grade science and this is her first year teaching eighth grade science. She has been at Johnson Middle School her entire teaching career. She received a B.S. degree in Biological Science and a Masters of Business Administration. Ms. Chemical is well respected by the students, and they respond to her in and out of the classroom due to her role as an assistant coach.

I collected student demographic data using North Carolina Window of Information on Student Education, North Carolina End-of-Grade Test data, and student interview data. There are sixteen students in this class, ten girls and six boys. The average score on the Reading EOG was a 351, which is considered a low level 2. Students who are performing at this level have inconsistent mastery of knowledge and skills that are fundamental in this subject area and that are minimally sufficient to be successful at the next grade level (NC DPI, 2008). The average score on the Math EOG

was a 355, which is a level 3. Students performing at this level consistently demonstrate mastery of grade level subject matter and skills and are well prepared for the next grade level (NC DPI, 2007). Only one student chose not to participate in this study.

The physical setting of the classroom was a traditional science classroom, including lab tables and equipment around the room. Essential questions, key vocabulary, and upcoming assignments were posted around the room. It appeared that Ms. Chemical had a good rapport with the students, and structure and expectations were in place for the students.

During the first week of implementation, Ms. Chemical decided to select the words for the class. She felt that it was important to gradually release the responsibility to the students since this was a different way of learning vocabulary. For the first two sets of words, the words were science-specific terms. The last set of words came from an informational article related to their topic of study.

In order to introduce students to the interactive word wall, Ms. Chemical posted the ten words on the Smartboard. The following words from their unit on matter were used for the first week: *volume*, *density*, *physical change*, *matter*, *meniscus*, *heat*, *mass*, *specific heat*, *inertia*, and *weight*.

She used a document camera to project each phase and tasks that needed to be completed within each phase. Ms. Chemical used the handout I gave to all teachers during the professional development (see Appendix F). The phases included introducing, connecting, and applying the words. Ms. Chemical put students in groups of three to four to complete the different phases. There were no examples provided for students to see what was expected of them. Ms. Chemical simply gave oral directions and assisted

groups as necessary. During the first few days, Ms. Chemical had them work on their assigned word, the definitions, and the color that represents each word. All groups were given poster paper, note cards, markers, and dictionaries. She also instructed students to use their notes to assist them in writing the definitions for the words.

There was a lot of discussion the first few days the interactive word wall was introduced because students had a lot of questions related to the color chart. The color chart did not seem to easily apply to science terms. Ms. Chemical assisted each pair with their color choice, so this seemed to ease students' anxiety towards completing the task. Ms. Chemical reiterated to each group the importance of not only linking a color to a word, but also being able to justify your reasoning. For example, one group chose orange to represent *specific heat* because it represents energy. Students then worked on the symbol to represent the word, the sentence completion and a situation with a sentence. Ms. Chemical continuously monitored and supported groups as needed. Some groups did not complete the situation sentence before presentations. During presentations, the groups presented all of their information to the class. A group example:

Word: *mass*

Definitions: *something that has weight; anything you can see*

Color: *black represents something that you can see*

Symbol: *triple beam balance with a jar*

Sentence starters: *The shelf has matter because…* (It takes up space on the shelf).

A few students were not paying attention to the presentations. After the presentations were complete, Ms. Chemical had students place all of their information on the right wall

in the classroom. Ms. Chemical did not have students complete the last phase of the instructional design: the situation and sentence to go along with the situation.

For the second set of words, Ms. Chemical appeared to have done more planning in preparation for the set of tasks. She had the students choose their own words to study in depth. The students chose the following words to study in depth: *solubility, physical property, malleability, chemical reaction, change, ductile, indicators, chemical property,* and *polar*. Ms. Chemical modeled each phase for students by showing them an example she created. She broke down each phase of the instructional design for presentations. For example, students presented their word, definitions, and color before they moved on to the next set of tasks. Student then worked on the symbol and two sentence completions to present to the class, and then placed the materials on the word wall. During the observation, students were working on the illustration of a situation and a sentence related to the illustration. The situation sentence proved to be the only difficult task for students. Ms. Chemical continuously assisted groups with their sentences. Students appeared to be actively engaged in the lesson because they were allowed to work in groups to complete the tasks. The class seemed to easily move through all phases of the instructional framework because they were familiar with the routine.

Students chose words from a science related article for the last set of words. Ms. Chemical wanted to see how students would self-select words that were not just scientific.. She felt students were more interested with the last set of words because they had not seen the words or worked with them before in science class. The class chose nine words to study in depth*: limitations, fluke, mundane, extrapolate, inexplicable, mystified, postulate, illuminate,* and *juxtaposition*. The students and Ms. Chemical reported that the

words were difficult, but they would see them across different contexts. Ms. Chemical placed students in pairs and assigned them each one word. Students continued to work on each phase and present their information before they moved on to the next phase. The pairs spent subsequent lessons working on a word analysis sheet. Ms. Chemical asked students to complete two sheets using words they did not present to the class. When students completed the word analysis sheet, they wrote the definition of the word, a contrasting statement, and provide an example of using the word. The following is an example of a word analysis chart for the word *fluke.*

Definition- *A stroke of good luck*

Contrast- *To have bad luck*

Example- *a picture of a four-leaf clover*

Student Perspective

To further investigate teacher and student use of the interactive word wall, I am revisiting the survey data. Each statement measured students' perceptions of the use of the interactive word wall within their classroom. Specifically, questions four through twelve will be discussed in this section. Fourteen students completed the pre survey and fifteen students completed the post survey. The data in Tables 21 and 22 detail students' pre and post-survey responses regarding the use of the interactive word wall in their classroom.

Table 21

Analysis of Pre Student Survey: Science

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
My teacher uses a word wall in	3.7	2	6	4	1	

the classroom.		(15%)	(46%)	(31%)	(8%)	
I use the words from the word wall.	2.9		2 14%	7 50%	5 36%	
My teacher selects the words for the word wall.	3.6	2 14%	6 43%	5 36%	1 7%	
I have opportunities to self-select words for the word wall.	2.9	1 7%	3 21%	5 36%	3 21%	2 14%
My teacher refers to the words on the word wall every day.	2.9		6 43%	4 29%	1 7%	3 21%
My teacher connects new words on the word wall to words that I already know.	2.6		3 21%	6 43%	2 14%	3 21%
I have opportunities to work in groups to discuss words from the word wall.	2.4	1 7%	1 7%	4 29%	4 29%	4 29%
I have multiple opportunities to work with and use words from the word wall.	3.2	1 7%	3 21%	8 57%	2 14%	0 0%
The word wall in my classroom has colors and pictures.	2.5	1 7%	1 7%	4 29%	6 43%	2 14%

Table 22

Analysis of Post Student Survey: Science

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
My teacher uses a word wall in the classroom.	3.7	4 (27%)	3 (20%)	7 (47%)	1 (7%)	
I use the words from the word wall.	2.6		1 (7%)	8 (53%)	5 (33%)	1 (7%)
My teacher selects the words for the word wall.	2.9	1 (7%)	2 (13%)	7 (47%)	5 (33%)	
I have opportunities to self-select words for the word wall.	3.3	2 (13%)	3 (20%)	7 (47%)	3 (20%)	
My teacher refers to the words on the word wall every day.	3.2	1 (7%)	4 (27%)	8 (53%)	1 (7%)	1 (7%)
My teacher connects new words on the word wall to words that I already know.	2.7		3 (20%)	5 (33%)	6 (40%)	1 (7%)
I have opportunities to work in groups to discuss words from the word wall.	3.9	7 (47%)	2 (13%)	5 (33%)		1 (7%)
I have multiple opportunities to work with and use words from the word wall.	3.8	3 (20%)	6 (40%)	6 (40%)		
The word wall in my classroom has colors and pictures.	4.7	12 (80%)	1 (7%)	2 (13%)		

Question four asked students if their teacher used a word wall. The mean of scores for this item is 3.7 on the pre survey and 3.7 on the post survey. On the pre survey, students responded to this question with *often* (*f*=6). On the post survey, students responded with *sometimes* (*f*=7). There was little change in students' pre and post survey responses.

Questions five asked students if they used the words from the word wall. The mean of scores for this item is 2.9 on the pre survey and 2.6 on the post survey. Students responded *sometimes* on both the pre (*f*=7) and post survey (*f*=8).

Question six asked students if their teacher selects word for the word wall. The mean of scores for this item is 3.6 on the pre survey and 2.9 on the post survey. Students responded with *often* (*f*=6) on the pre survey and *sometimes* (*f*=7).

Question seven asked students if they had opportunities to self-select words for the word wall. The mean of scores for this item is 2.9 on the pre survey and 3.3 on the post survey. Students responded *sometimes* on both the pre (*f*=5) and the post survey (*f*=7). This corresponds with interview data that explained Ms. Chemical chose the first set of words and let the students choose the last two sets of words.

Question eight asked students if their teacher referred to the words on the word wall every day. The mean of scores for this item is 2.9 on the pre survey and 3.2 on the post survey. Students reported *often* (*f*=6) on the pre survey and *sometimes* (*f*=8) on the post survey. This indicates a slight increase in the teacher referring to the words on the word wall.

Question nine asked if their teacher connected words on the word wall to words they already know. The mean of scores for this item is 2.6 on the pre survey and 2.7 on

the post survey. On the pre survey, students responded *sometimes* (*f*=6). On the post survey, students responded *seldom* (*f*=6).

Question ten asked students if they had opportunities to work in groups to discuss their words from the word wall. The mean of scores for this item is 2.4 on the pre survey and 3.9 on the post survey. Students responded *sometimes* (*f*=4), *seldom* (*f*=4), and *never* (*f*=4) on the pre survey. On the post survey, students responded *always* (*f*=7). Therefore, the data suggests students had more opportunities to work in groups during the instructional design.

Question eleven asked students if they have multiple opportunities to work with and use words from the word wall. The mean of scores for this item is 3.2 on the pre survey and 3.8 on the post survey. On the pre survey, students responded *sometimes* (*f*=8) and on the post survey they indicated *often* (*f*=6) and *sometimes* (*f*=6).

Question twelve asked students if the word wall in their classroom has colors and pictures. The mean of scores for this item is 2.5 on the pre survey and 4.7 on the post survey. On the pre survey, students responded *seldom* (*f*=6); however, on the post survey, students responded *always* (*f*=12). This corroborates with other data showing the word wall used in the classroom included colors and pictures.

There was minimal change in the data from the pre to post survey. The only major changes in student perceptions were related to the last three questions of the survey. Based on the post survey data results, the data suggests students had more opportunities to work in groups, multiple opportunities to work with and use words, and their word wall included colors and pictures. Therefore, the survey data indicates that the basic components of the interactive word wall were used during the instructional design:

cooperative learning, multiple exposures to words, and associations to words using colors, pictures, and symbols.

Discussion.

Prior to the implementation of the interactive word wall, Ms. Chemical's vocabulary instruction consisted of a traditional approach of assigning terms for students to look up the meaning. Although she followed the steps outlined in the instructional framework when working with the first set of words, she reverted to her typical instruction of telling and assigning students the tasks to complete. Throughout this study, Ms. Chemical's confidence and ability using the interactive word wall instructional design improved. She began to model each task for students as well as provide a visual for students to use while working independently.

Instruction also progressed to what researchers term a "rich instructional approach" to vocabulary learning (Beck et al.1982; McKeown, Beck, Omanson, & Pople, 1985; Mezynski, 1983; Stahl & Fairbanks, 1986). Students were given the opportunity to be actively engaged in multiple, varied and meaningful experiences with words. Students selected a color to represent the term, defined the words, created symbols to present words, wrote sentence completions, and illustrated a situation for using the term. Ms. Chemical also had another instructional element to this study by extending vocabulary activities beyond the interactive word wall instructional design. This provided another opportunity for students to encounter the words to improve their recall, understanding and application of the target words.

Additionally, Ms. Chemical created an environment that promoted a word rich environment. The visual of the word wall was used to assist students in creating new

representations of words as well as a continuous point of reference. Time was devoted daily to use and discuss key terms for the interactive word wall. Students were also given an opportunity to share their new learning by presenting to the class. Due to Ms. Chemical's rapport with her students, they also felt safe to ask questions related to the interactive word wall tasks.

Student ownership of their learning also increased during this study. The students reported the importance of self-selecting their words to study because this ensured they were learning new words. Students were able to personalize word learning by choosing words they felt were important and then create original representations of the words. Students were exposed to multiple encounters with the words to the words by engaging in a variety of activities that required students to apply words to new and different contexts.

Another important theme is the collaborative grouping used to complete all tasks of the interactive word wall. After the first round of working with the interactive word wall, Ms. Chemical was able to become a facilitator by assisting students if they needed help. The groups were self-regulated and monitored their own progress in order to complete all tasks. Students also indicated the importance of working in groups to help with their understanding of the key terms.

Classroom Four: Mathematics, Mr. George

Classroom four is the mathematics classroom. Mr. George is the only Spanish-speaking participant, who has a B.S. in Mathematics and a specialization in Mathematics Education. He has been teaching for 11 years, with nine of those years being in Colombia. This was his third year teaching at Johnson Middle School. Mr. George used a more teacher-centered approach due to his subject matter. A new topic was introduced

almost every day that required Mr. George to explicitly explain and model the process in order for students to understand the steps. The goals and expectations in Mr. George's classroom were often unclear, and students were often not held accountable for their work. At times, Mr. George seemed frustrated when teaching because students were often disruptive and not following directions. Although he struggles with classroom management at times, he welcomes feedback and support in improving his craft.

The physical setting was a traditional classroom setting with student desks organized in rows of seven to eight desks. Mr. George had some important math terms posted in his classroom. The math goals and some vocabulary were present around the room.

Mr. George decided to use the instructional design during the remediation time after lunch. Initially, Mr. George struggled with the implementation of the interactive word wall. He acknowledged this in the post interview, "For the first set of words I think I did something in a different way, and the results were not the ones I was expecting. For the first set of words, I gave students the whole thing together, and for the last set I went step-by-step."

During the initial observations, students entered the classroom noisy and some came in late. Some students went to their lockers and the restroom before coming back to class after lunch. It appeared that students were not expected to come back to the classroom after lunch. Initially, due to students not coming back to the classroom right after lunch, there was little time left to work on the interactive word wall. Also, there were a lot of side conversations between students when Mr. George would go over the directions. By the last set of words, Mr. George, with the help of his grade level principal,

transitioned the students directly from the cafeteria to his classroom in order for them to have more time to work on the word wall. Students also limited their off-task behaviors when working with the last set of words.

To begin the first week, Mr. George assigned his students to work in pairs to complete the different phases of the interactive word wall instructional design. Mr. George briefly explained to students that they would be working on different activities to help them understand some math terms more in depth. He then gave each pair several word problems that included topics they would be studying for the week or topics they had already covered. Mr. George then had the pairs identify words within the word problem that they did not know or could not explain to someone else. Mr. George put all the words on the board and the class decided on seven words to study in depth. Students chose the following words: *diagonal*, *nearest*, *average, cylinder*, *lean*, *base,* and *inverse.* He verbally used the word *fad* to explain how to choose a color, connect a symbol, and create a situation. He explained to the students:

> I chose green to go with the word because I thought of Silly Bandz with bright green (highlighter color green) for the word. Then, the symbol I chose was Silly Bandz because it is a current *fad* at our school. The next part is the picture and I tried to create a situation in which the word would be used. So, I drew a shopping center with several billboard advertisements about Silly Bandz and the fad.

The next day, Mr. George reminded students of his example and then explained to them they would write their word, define the word using a dictionary and/or math book, and select a color for the word. Students were using the note cards, group poster chart, Webster's dictionary, and their math book to complete the task. Since students

were not given the color chart, many students struggled with connecting a color to their word. Several pairs did not understand the purpose behind the tasks they were completing. For the next set of tasks, students had to create a symbol and a situation picture. Finally, the students used the chart of paper to rewrite the definition and the situation sentence. For the first set of words, students did not complete the sentence completion task. Students then presented all phases of the interactive word wall over the next two days. Before beginning presentations, Mr. George visually displayed the way he wanted students to present their work: word, color, definitions, symbol, and examples. The following is an example of a pair using the word *average.*

Word: *average*

Definition: *sum of data divided by number of items in data set*

Color: *brown because the average person's hair color is brown*.

Symbol: *Formula for mean*

Situation picture*: 5 eyeballs – 1 is blue and the rest are brown*.

Situation sentence*: Brown is the average color of their eyes*.

During presentations, most students were unable to provide a rationale for their color. Mr. George tried to interject and explain the color should help understand the words. Although Mr. George did not have a visual example for students to see the different phases of the interactive word wall, he did verbally give examples of each phase.

Due to a three-day weekend and lack of planning, Mr. George was not prepared to begin the interactive word wall instructional design on Tuesday of the third week. He started Wednesday with a new set of words, so students did not have as much time to

complete the tasks using the interactive word wall. For the second set of words, Mr. George gave each pair a page number and problem number in the math workbook to find two words. He did this to ensure every pair had different words. Once the pair found the word, Mr. George put it on the board beside the problem number. Students worked on the following words: *positive*, *dilation*, *situation*, *length*, *circular*, *descending*, *minimum*, and *operation.* Mr. George then passed out the materials for student use. Several students did not know what to do with the note cards so they asked Mr. George. He then stopped the entire class to verbally go over an example of finding the word, writing it on the note card, defining it on the group poster chart, and then linking a color to the word. Students still struggled with the color task because they did not have the color sheet to help them. For example, when I asked pairs why they chose their color, most of them responded by saying, "I don't know…that's the color in the book." Since I noticed that several students were still struggling to complete the tasks, I stopped the entire class to model the different tasks that students were expected to complete. Pairs then continued working with their word to complete the tasks. For example, using the word *dilation*, a pair explained the following:

Word: *dilation*

Definition: *a transformation that alters the size but not its shape*.

Symbol: *Two squares that were different sizes*

Situation: *a driver's license that is being copied*

While students were working and I was observing, Mr. George left the room to make a phone call. This seemed to demonstrate a lack of importance of the interactive word wall instructional design on Mr. George's part.

In preparation to work with the last set of words, Mr. George and I met so that I could model all steps of the interactive word wall for him. I explained to him the importance of modeling for students so that they would understand each individual task. I also gave him another copy of the color sheet and reminded him that every group should have a copy to use during class. He seemed very receptive to the feedback.

For the last set of words, Mr. George decided to have students complete small tasks and present before they moved on to the next set of tasks. In preparation for student selection of words, Mr. George gave each pair two word problems to find a word they did not know or felt that the whole class should know. The students chose the following words to study: *divisibility*, *term*, *digit*, *prime*, *composite*, *expression, increase*, *phrase, multiplication,* and *division*. Mr. George used the words *grimace* and *discordant* to model each task for the students. These were examples teachers were given during the professional development sessions. For instance, Mr. George showed students how to define the word in at least three ways and used the color sheet to select the color gray because it represents being unhappy. Mr. George gave each pair the color sheet to use, as well as their math textbook, dictionaries, note cards, and chart paper to assist them in completing the tasks. After students completed the tasks they presented to the entire class their word, definitions, color and rationale. For the next two days, students completed the symbol, rationale for the symbol, and sentence completions. Students then completed the situation and accompanying sentence for the following two days. Students seemed much more engaged when working with the third set of words. The following is a student example of using the term *increase*:

Word: *increase*

Definition: *to make or become greater*

Color: *green because it means growth*

Symbol: *1, 2, 3, 4, 5,…*

Sentence completion: *There was an increase in the numbers by….*

Situation: *a line graph going up*

Sentence: *We are seeing an increase in the temperature this year.*

Lack of classroom management was noted during the first four weeks of the instructional design. Some students were off task during several observations. Off task activities included screaming across the room to other students, walking out of the class, and coming late to the class. Towards the end of the study, Mr. George realized the importance of modeling for students what is expected, as well as giving them small tasks to complete versus one large task at a time.

Student Perspective.

To further investigate teacher and student use of the interactive word wall, I am revisiting the survey data. Each statement measured students' perceptions of the use of the interactive word wall within their classroom. Specifically, questions four through twelve will be discussed in this section. Nine students completed the pre survey and twelve students completed the post survey. The data in Tables 23 and 24 detail students' pre and post-survey responses regarding the use of the interactive word wall in their classroom.

Table 23

Analysis of Pre Student Survey: Math

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
My teacher uses a word wall in the classroom.	1.8		1 (11%)	1 (11%)	2 (22%)	5 (56%)
I use the words from the word wall.	2	1 (11%)		2 (22%)	1 (11%)	5 56%)
My teacher selects the words for the word wall.	1.9	1 (11%)	1 (11%)		1 (11%)	6 (67%)
I have opportunities to self-select words for the word wall.	2.1			4 (44%)	2 (22%)	3 (33%)
My teacher refers to the words on the word wall every day.	1.7			2 (22%)	2 (22%)	5 (56%)
My teacher connects new words on the word wall to words that I already know.	2.2	1 (11%)	1 (11%)	2 (22%)		5 (56%)
I have opportunities to work in groups to discuss words from the word wall.	1.6		1 (11%)	1 (11%)		7 (78%)
I have multiple opportunities to work with and use words from the word wall.	1.9		2 (22%)		2 (22%)	5 (56%)
The word wall in my classroom has colors and pictures.	1.3				3 (33%)	6 (67%)

Table 24

Analysis of Post Student Survey: Math

Question	Mean (M)	Always (f)	Often (f)	Sometimes (f)	Seldom (f)	Never (f)
My teacher uses a word wall in the classroom.	3.3	2 (17%)	3 (25%)	4 (33%)	2 (17%	1 (8%)
I use the words from the word wall.	2.9	1 (8%)	2 (17%)	5 (43%)	3 25%)	1 (8%)
My teacher selects the words for the word wall.	2.4		2 (17%)	5 (42%)	1 (8%)	4 (33%)
I have opportunities to self-select words for the word wall.	3.3	2 (17%)	4 (33%)	3 (25%)	2 (17%)	1 (8%)
My teacher refers to the words on the word wall every day.	2.8		4 (33%)	4 (33%)	2 (17%)	2 (17%)
My teacher connects new words on the word wall to words that I already know.	3	1 (8%)	2 (17%)	7 (58%)		2 (17%)
I have opportunities to work in groups to discuss words from the word wall.	3.9	6 (50%)	2 (17%)	2 (17%)	1 (8%)	1 (8%)
I have multiple opportunities to work with and use words from	3.3	1 (8%)	5 (42%)	3 (25%)	2 (17%)	1 (8%)

the word wall.						
The word wall in my classroom has colors and pictures.	4.2	8(67%)	1 (8%)	1 (8%)	1 (8%)	1 (8%)

Question four asked students if their teachers used a word wall. The mean of scores for this item is 1.8 on the pre survey and 3.3 on the post survey. On the pre survey, students responded *never* (*f*=5). On the post survey, they responded *sometimes* (*f*=4).

Question five asked students if they used words from the word wall. The mean of scores for this item is 2 on the pre survey and 2.9 on the post survey. They responded *never* (*f*=5) on the pre survey and *sometimes* (*f*=5) on the post survey.

Question six asked students if their teacher selects the words from the word wall. The mean of scores for this item is 1.9 on the pre survey and 2.4 on the post survey. Students responded *never* (*f*=6) on the pre survey and *sometimes* (*f*=5).

Question seven asked students if they had opportunities to self-select words for the word wall. The mean of scores for this item is 2.1 on the pre survey and 3.3 on the post survey. Students responded *sometimes* (*f*=4) on the pre survey and *often* (*f*=4) on the post survey.

Question eight asked students if their teacher refers to the words on the word wall every day. The mean of scores for this item is 1.7 on the pre survey and 2.8 on the post survey. Students responded *never* (f=5) on the pre survey. Students indicated *often* (*f*=4) and *sometimes* (*f*=4) on the post survey.

Question nine asked students if their teacher connects new words on the word wall to words that they already know. The mean of scores for this item is 2.2 on the pre

survey and 3 on the post survey. Students responded *never* (*f*=5) on the pre survey and *sometimes* (*f*=7) on the post survey.

Question ten asked students if they have opportunities to work in groups to discuss words from the word wall. The mean of scores for this item is 1.6 on the pre survey and 3.9 on the post survey. On the pre survey, students responded *never* (*f*=7). On the post survey, students indicated *always* (*f*=6).

Question eleven asked if students have multiple opportunities to work with and use words from the word wall. The mean of scores for this item is 1.9 on the pre survey and 3.3 on the post survey. Students indicated *never* (*f*=5) on the pre survey and *often* (*f*=5) on the post survey.

Question twelve asked students if the word wall in their classroom has color and pictures. The mean of scores for this item is 1.3 on the pre survey and 4.2 on the post survey. Students responded *never* (*f*=5) on the pre survey and *always* (*f*=8) on the post survey.

Discussion.

Mr. George plans to continue using the interactive word wall, but during his regular math class instead of the remediation time after lunch. He explained:

> I was thinking at first a good time to do it was right after class, and now I say it's better during class time. Probably instructional time and short amount of time to work on word wall and then the rest for instruction.

Mr. George felt that the students would be more invested in the word wall if it was part of their regular class. Since students do not get a grade for the remediation class, some students do not value the class as much as their content area classes.

There was a positive impact on Mr. George's use of the interactive word wall as a vocabulary instructional strategy. Prior this study, Mr. George used a primarily definitional-only approach to vocabulary instruction. At times during the initial implementation, Mr. George struggled understanding and using the interactive word wall instructional framework. He would often revert to his typical instructional approach of telling and assigning tasks to complete. In their research on vocabulary instruction, Beck and McKeown (2004) noted strong pedagogical skills were required to help students explore new words in new and instructionally relevant contexts. Each week Mr. George continued to improve his knowledge of the interactive word wall, as well as meet with me to discuss how he could improve the lessons. By the end of this study, Mr. George began to devote more time to modeling the tasks involved in using the interactive word wall. He also became more of a facilitator during student independent work instead of directing all of the instructional decisions of the interactive word wall instructional design.

The use of the interactive word wall instructional framework also promoted active student engagement in the classroom. Prior to this study, Mr. George used a teacher centered approach, which he would give students vocabulary terms with their definition. During this study, students were required to create pictorial representations and examples using the word. Students felt they had ownership over their learning. Students were given opportunities to actively discuss and work with the words in groups, which improved student motivation to learn the words.

There was also an increase in the word rich environment of Mr. George's classroom. Prior to this study, Mr. George had very little content-specific terms visually displayed in his classroom. During this study, there Mr. George created a specific

location for the word wall to promote student use of new terminology. There was very little discussion of important terms prior to the interactive word wall instructional design. During this study, Mr. George and his students spent numerous days discussing and using the terms that students chose as important to their understanding.

Student engagement improved throughout the study as well. During the beginning, many students were observed engaging in off-task behaviors, such as talking to another student while the teacher was addressing the entire class. By the end of this study, students were engaging in on-task behaviors and completing each task after Mr. George modeled the task. Student engagement also improved during this study because they were given an opportunity to self-select words. Student interview data suggested that students valued the importance of working in groups to complete the tasks. This further supports an increase of student engagement during this study.

The survey data supports the increased usage of the interactive word wall over the instructional design period. The biggest increase included teacher use of a word wall, student self-selection of the words, teacher referral to the word wall, the opportunity to work in groups, multiple opportunities to work with words, and the use of colors and pictures on the word wall from.

Conclusion

All the teachers believed in helping students increase their knowledge of words, but they all took a different approach. Ms. Smith led a more “student-centered” classroom in which students were in charge of their own learning and she was the facilitator. Like Ms. Smith, Ms. John also wanted to use the “best teaching strategies” to ensure her students have a deep understanding of the social studies concepts. She applied

a more structured teaching style in her classroom. Ms. Chemical had a strong rapport with her students and a created student-centered learning environment. The classroom is set-up for a lot of hands-on experiences to encourage students to understand science concepts by doing and applying. Mr. George used more of a direct instruction approach to his teaching in order to explain and show students how to complete math problems. During the study, Mr. George had a difficult time with classroom management. His initial struggles with student behavior allowed little opportunity for him to focus on relationships with his students. Towards the end of the study, he began to empower the students and provided a more student-centered classroom environment.

Cross-Case Analysis

This section discusses the themes that appeared across all four cases. Significant similarities emerged among the participants' meaning of the phenomena of the interactive word wall. Four commonalities emerged from the data: (1) Teacher and student understanding of the word wall, (2) Student motivation and engagement, (3) Time constraints using the interactive word wall, and (4) Teacher adaptations of the interactive word wall instructional design. Teacher understanding of the purpose and use of a word wall changed throughout the study. Students' motivation and engagement in completing the interactive word wall tasks increased during this study. The data also suggests that teachers felt the interactive word wall required a significant amount of time that would take away from their curriculum. All teachers in this study also made several adaptations to the original word wall instructional design in order to meet the needs of their students.

Understanding

Teacher and student understanding of the function and use of the word wall changed from the pre to post interviews. Teachers moved from general surface level features for using a word wall, such as a visual reference point, to enabling students to understand words more in-depth and become self-sufficient in selecting their own words. In pre interviews, teachers and students focused on the organization of the word wall. Teachers felt that there were too many words on the initial word wall, with very little organization or purpose. They wanted to see the words in a particular order, such as alphabetical order. After the implementation of the interactive word wall, the focus shifted towards the importance of cooperative grouping, making connections to words, multiple exposures to words, and in depth use of the words. Teachers initially expressed how important it was for students to understand content-specific vocabulary, but they typically used only surface level vocabulary instruction, which included the dictionary usage approach. During and after the use of the interactive word wall, the teacher's understanding of vocabulary instruction was more aligned with what Beck and colleagues (2002) define as *rich instruction*. This includes teacher modeling, multiple and repeated encounters with the words, and meaningful use of the words through speaking, listening, and writing.

Motivation and Engagement

Teachers and students reported an increase in student motivation and engagement during the instructional framework. Perry and colleagues (2006) proposed that engaging tasks, teacher support, informative feedback, teacher expectations, adapting instruction to meet student needs and interests, mastery goal structures, and positive student-teacher relationships have all been related to increased student motivation. The interactive word

wall instructional design provided an opportunity to make the content relevant for the students in order to increase their motivation. They were able to self-select the vocabulary words that were most important to them, which made the tasks instructionally meaningful and relevant for the students. Teachers also became facilitators of the instruction instead of driving the instruction.

Another important component of student motivation is adapting instruction to meet the needs and interests of students (Kaplan, Middleton, Urdan, & Midley, 2002). All four teachers adapted the instructional design to meet the needs of their students. For instance, the amount of words, grouping, and the duration of time studying a particular set of words were important adaptations made during this study. Teachers reported that adaptations were necessary to ensure students had a deep level of understanding of the words and also limit the frustration level of their students.

Providing the needed academic support is also important in relation to motivation (Patrick, Ryan & Kaplan, 2007). In this study, teachers created classroom environments in which students felt supported in completing the tasks. For instance, the teachers provided the academic support for students that promoted classroom engagement by modeling each task in order to scaffold the instruction. Teachers were also available to answer any questions students had during the instructional design.

Students are also motivated by open and challenging tasks (Miller, 2003: Miller & Meece, 1999; Turner, 1995). As with the previous research, students participating in this study were motivated due to the multiple and complex tasks they had to complete as a group. Students reported that they liked creating their own definitions, pictures, symbols and situations related to their vocabulary words. Students were also challenged to

complete tasks that moved beyond surface level vocabulary learning (such as, the writing and copying down of definitions).

Goal orientation is also important in student motivation. There are two types of goal orientation: mastery goal orientations and performance goal orientations (Ames, 1992). Mastery goal orientations focus on the belief that one's effort is related to success. Students are more interested in developing their understanding and less concerned with demonstrating their knowledge (Kaplan et al, 2002). In this study, teachers were continually engaging with the students in order to help students develop their understanding of the content specific words. They also encouraged and expected all students to complete the different tasks associated with the interactive word wall.

Time

Three of the four teachers felt that the "mandated" curricula by the state and district would limit their ability to use the interactive word wall. In order to complete all of the tasks using the interactive word wall, a minimum of 20 minutes a day was required. Some of the teachers felt that this would not be feasible due to the content they must cover in a 60 minute class period. Pressures to teach subject area content as efficiently as possible can limit a teachers' willingness to abandon their traditional methods of teaching (Cantrell, Burns, & Callaway, 2009). The day-to-day time constraints are a reality for most teachers.

Some teachers also used the "time factor" to explain why they would not continue to use the interactive word wall. This is related to Hargreaves and Goodson's (2006) research of comprehensive school-wide reform. Under this reform, outside agencies scrutinize schools through performance indicators based on schools deemed as

successful, leading to a perception by teachers that they will never be able to meet expectations (Stevenson, 2007). Teachers feel that they have lost the ability to make classroom decisions as experts (Hargreaves & Goodson, 2006). It is possible that teachers agreed to use interactive word wall for six weeks in order to support my research, not because they decided it was an important strategy to help students build their vocabulary.

Adaptations

All teachers made some adaptations to the original instructional design based on their students' needs. Most of the adaptations to the original interactive word wall focused on the changes in the teacher delivery system and the time needed to complete the tasks. By the end of the instructional design, three teachers decided to have student groups complete one phase and present before moving on to the next phase. Teachers felt this was important in ensuring students were given multiple opportunities to work with the words. Another adaptation was the amount of time used to complete all phases of the instructional design. During the professional development sessions, teachers felt that they would work with a new set of words each week. Once teachers began the initial phase of the instructional design, they realized that students would need more time to complete all phases in a quality manner. By the end of the instructional design, most teachers felt that students could move a little faster because they had demonstrated six weeks of independently completing all phases of the instructional design.

Another adaptation was the amount of scaffolding students needed to begin the instructional design. Throughout the instructional design, all teachers realized that students needed support from either their teacher or other students in order to complete all of the required tasks. Several teachers, Ms. Smith in particular, modeled each phase of

the instructional design for students, as well as provided visual examples for students and worked with individual groups throughout the process. By the end of the instructional design, teachers felt students were more independent and less support was needed from teachers.

Bransford and colleagues (2005) explained that teacher adaptation is the ultimate goal because the teacher has the amount of knowledge and the ability to recognize the situation in which adaptation to instruction is necessary. In their examination of five studies in which teachers adapted their instruction, Clark and Peterson (1986) found the majority of teachers' instructional decisions were about their students or the instruction. Across all four cases, teachers made instructional adaptations to the instructional framework based on their group of students and their instruction.

The following section will address research question three- *What impact does the use of an interactive vocabulary tool, the interactive word wall, have on student word learning?*

A pre and post Knowledge Rating Scale (Blachowicz & Fisher, 2006) and a series of vocabulary quizzes were used to gain a deeper understanding of the impact of the interactive word wall on student learning. A pre Knowledge Rating Scale was administered before the interactive word wall instructional design began in each classroom. This was used to establish that no significant differences existed among students in each class. The Knowledge Rating Scale assessed prior knowledge of 10 target words that would be presented during the unit of study for each content area. Prior to the first class, the teachers and I selected words from the unit that were critical to understanding the content of the unit. The Knowledge Rating Scale required students to

indicate one of the following: know it well, have seen or heard it, or have no clue of the word meaning. If possible, they were to define the word. At the end of the six weeks, students were then asked to complete a post- Knowledge Rating Scale. Students were also given vocabulary quizzes every two weeks that assessed their retention of the vocabulary items. The teacher-developed quizzes required students to respond to meaningful use sentence prompts. The teachers developed the quizzes and then asked for feedback from me before they administered the quiz to students. The following section will summarize the findings of the pre-post Knowledge Rating Scale (Blachowicz & Fisher, 2006) and the series of vocabulary quizzes within each case. Each individual content area will be presented: language arts, social studies, science and mathematics.

Language Arts

The pre Knowledge Rating Scale consisted of the following 10 words*: justice, counteract, accountability, imbalance, inheritance, ceremonial, custom, tradition, advisory,* and *sovereignty*. All of the words were based on their study of *Touching Spirit Bear*. Ms. Smith used *counteract*, *inheritance*, *custom*, *and advisory* as examples to introduce each new set of target words. The pre Knowledge Rating Scale indicated students felt, on average, they had no understanding of the meaning of 4.4 words, have seen or heard of 3.2 of the words and knew 2.4 words well out of 10 words. The post Knowledge Rating Scale indicated students felt, on average, they had no understanding of the meaning of 1.8 words and knew 4.3 words well out of 10 words. Students correctly defined an average of .8 words on the pre Knowledge Rating Scale and 3.4 words on the post Knowledge Rating Scale. All of the students showed an increase in defining the words on the Knowledge Rating Scale.

Students were given a vocabulary quiz at the end of their study of each set of words. The following words were used for quiz 1: *substantial, warfare, diminished, justice, political, sovereignty, accountability, elaborate,* and *mechanism*. The mean score for quiz one was a 70 (range, 58 to 83). The following words were used for quiz 2: *fiber, ceremony, erect, missionary, accompanied, debt, crest, totem, cinnabar,* and *signify*. The mean score for quiz two was a 75 (range, 53 to 93). The following words were used for quiz 3: *timid, boastful, gorgeous, melancholy, lively, perfectionist, manipulative, keen, dainty,* and *eager*. The mean score for quiz three was an 88 (range, 70 to 100). The quiz results indicate that there was a positive impact on students' word learning throughout the study. The student mean score increased 18 points over the duration of the study.

Social Studies

The following words were used for the pre-post Knowledge Rating Scale: *democracy, nationalism, imperial, imperialism, cash crop, colony, tribute, mercantilism, citizenship,* and *nation*. Only three of the words from the Knowledge Rating Scale were used during the interactive word wall instructional design. This was due to the fact that Ms. John did not get as far in the unit of study as she had originally anticipated when creating the Knowledge Rating Scale. The pre Knowledge Rating Scale indicated students felt, on average, they had no understanding of the meaning of 4.8 words, and knew 0.8 words well. The post Knowledge Rating Scale indicated students felt, on average, they had no understanding of the meaning of 2.9 words and knew 2.6 words well. Students correctly defined an average of .8 words on the pre-Knowledge Rating Scale and 1.6 words on the post-Knowledge Rating Scale. The data showed a slight increase in student's ability to correctly define the words on the Knowledge Rating Scale.

Quiz results also further addressed research question 3. The following words were used for quiz 1: *renowned, frenzy, environmental, merited, testosterone, and jubilant*. The mean score for the first quiz was a 68 (range, 17 to 100).The first quiz was based on words students self-selected from an article about a female football coach. The words were not social studies-specific terms because they came from an article that was not directly related to social studies. The following words were used for quiz 2: *premises, apprentice, native,* and *fertile*. The mean score for the second quiz was a 58 (range, 25 to 100). The following words were used for quiz 3: *legislature, democracy, Mayflower Compact,* and *House of Burgesses*. The mean score for the third quiz was a 43 (range, 14 to 85). The terms for the second and third quiz were more social studies-specific and more abstract. The words from quiz 3 were integral to student understanding of the subsequent content. The vocabulary words varied throughout the study, which could potentially skew the results. The terms for quiz one were more general than the terms used for quizzes two and three. The terms for quizzes two and three required students to have prior knowledge of the historical significance of the American Revolution. Although the mean of scores decreased on quiz three, several students indicated in their reflection that they learned more words using the interactive word wall instructional framework.

Science

The Knowledge Rating Scale was given to students prior to the instructional design in the science classroom. Ms. Chemical chose the following 10 words based on the unit of study on matter: *matter, density, heat, solubility, physical property, chemical property, polarity, change, indicator,* and *chemical reaction.* All ten words were used

during the instructional design. The pre-Knowledge Rating Scale indicated students felt, on average, they had no understanding of the meaning of 4.2 words and only knew 2.1 words well. The post-Knowledge Rating Scale indicated students felt, on average, they had no understanding of .2 words and new 4.3 words well. Students correctly defined an average of .8 words on the pre assessment and 3.5 words on the post assessment. This indicates almost a three word gain from the pre to post Knowledge Rating Scale.

Students were given a vocabulary quiz at the end of studying a set of words. Over the course of six weeks, students took three quizzes. The following words were used for quiz 1: *volume*, *density*, *physical change*, *matter*, *meniscus*, *heat*, *mass*, *specific heat*, *inertia*, and *weight*. The mean for the first quiz was a 49 (range, 30 to 90). The following words were used for the second quiz: *solubility*, *physical property*, *malleability*, *chemical reaction*, *change*, *ductile*, *indicators*, *chemical property*, and *polar*. The mean score for the second quiz was a 50 (range, 22 to 89). The following words were used for the third quiz: *limitations*, *fluke*, *mundane*, *extrapolate*, *inexplicable*, *mystified*, *postulate*, *illuminated*, and *juxtaposition*. The mean score for the last quiz was a 72 (range, 56 to 89). The first two quizzes were based on science specific terms, while quiz three was based on more general vocabulary terms found in an article. Each quiz showed an increase in the student mean score.

Math

The following words were used for the Knowledge Rating Scale: *circumference*, *circle*, *cylinder*, *right angle*, *hypotenuse*, *diagonal*, *lean*, *square root*, and *inverse*. The students were given the pre Knowledge Rating Scale before beginning the instructional design. Only 4 words were used during instructional design: *cylinder*, *diagonal*, *lean*, and

inverse. The pre-Knowledge Rating Scale indicated students felt, on average, they had no understanding of the meaning of 1.8 words and knew 5.1 words well. The post-Knowledge Rating Scale indicated students felt, on average, they had no understanding of the meaning of 1.4 words and knew six words well. Students correctly defined an average of 1.8 words on the pre-Knowledge Rating Scale and 2 words on the post-Knowledge Rating Scale. This indicates a slight increase in student's ability to define the words.

It is important to note that Mr. George gave the post Knowledge Rating Scale to his students the last day before students went on a two week break. Many of the students were upset that they had to complete the Knowledge Rating Scale instead of going outside with the rest of the grade level. This could have negatively influenced students' performance on this assessment.

Students also took a teacher-developed quiz at the end of their study of a set of words. The following words were used for quiz 1*: diagonal*, *nearest*, *average*, *cylinder*, *lean*, *base*, and *inverse*. The mean score for the quiz was a 51(range, 7 to 86). The following words were used for quiz 2: *positive*, *dilation*, *situation*, *length*, *operation*, *circular*, *descending*, and *factor*. The mean score for quiz 2 was a 73 (range, 13 to 100). The following words were used for quiz 3: *prime*, *expression*, *composite*, *increase*, *phrase*, *zero*, *multiplication*, *digit*, *term*, and *divisibility*. The mean score for quiz 3 was a 58 (range, 40 to 80). There was an increase in student mean scores from the first to second quiz, but a decrease from the second to the third quiz.

Discussion

The Knowledge Rating Scale was initially used to assess student's knowledge of key vocabulary within a specific content area. In most cases, the Knowledge Rating Scale proved to be difficult since students were self-selecting words during the unit of study instead of the teacher selecting the words to study. It is important to note that two of the classrooms did not introduce all words on the Knowledge Rating Scale during the instructional design--social studies and math classrooms. Although limited, the mean score related to students' ability to define the words increased from the pre to post-Knowledge Rating Scale in all cases. The biggest increase was in the science classroom, where students correctly defined 2.6 more words on the post-Knowledge Rating Scale. This increase possibly stems from the fact that Ms. Chemical introduced students to all 10 words during the study. Also, students reported that their typical vocabulary instruction included copying down the definition of science-specific terms. During this study, students were given multiple opportunities to work with and use the science specific terms that moved beyond surface level understanding.

The quiz mean scores for students in the language arts and science classroom increased over the duration of the study. The students' mean score in the math classroom increased from the first to second set of words, but decreased from the second to third set of words. The students' mean scores in the social studies classroom decreased over the duration of the study. This could possibly be because the first set of words were self-selected by students from an article they were reading in class and they were not subject-specific. The second and third set of words was subject specific words chosen by the teacher.

Summary

This chapter presents the results from this study that seeks to answer my three research questions. The first question asked- How do specific content area teachers and students perceive interactive word walls as an instructional strategy for enhancing word learning. Data indicated a general positive teacher and student perception towards using an interactive word wall in their classroom. Teachers and students felt the interactive word wall was valuable in learning more words. Student engagement also increased during the interactive word wall instructional framework. Teachers felt that a major challenge in the implementation was the time needed to complete all tasks. The second question asked- How do content area teachers and students use and adapt an interactive vocabulary strategy, the interactive word wall, as a tool for creating a word-rich environment. Analysis of observational data, interview data, and anecdotal records indicate an increase in knowledge and use of the interactive word wall during the study. The results indicated an increase in student motivation and engagement when they had opportunities to make choices over their learning. The time needed to fully implement the interactive word wall instructional design in conjunction with curricular obligations was seen as an obstacle for most teachers. Major adaptations to the interactive word wall instructional design focused on changes to the teacher delivery system as well as time needed to complete the tasks. The third question investigated in this study addressed the impact of the interactive vocabulary strategy, the interactive word wall, on student word learning. The quizzes and Knowledge Rating Scales (Blachowicz & Fisher, 2006) showed an overall positive growth in student vocabulary knowledge. The next chapter will discuss the conclusions, implications, limitations and recommendations for future research.

CHAPTER 5: CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Students are at risk for academic failure if they lack an adequate vocabulary (Becker, 1977). This idea underlies the purpose of this qualitative case study. The purpose of this study was to examine teachers' and students' perceptions and use of an interactive vocabulary strategy, in the form of an interactive word wall, as the focal point of systematic instruction in a vocabulary-rich literacy program. In the previous chapter, I presented findings addressing the research questions guiding this study. I now turn to the conclusions, implications, limitations of this study, and suggestions for future research.

Cronbach (1942) explained there are certain behaviors that discern and discriminate depth of word knowledge. Those behaviors include the ability to define a word, apply the word's meaning in other contexts, make accurate associations of the word to other words, correctly use the word, and apply underlying conceptual knowledge (Cronbach, 1942). Moreover, Beck, McKeown, & Kucan (2002) explained "vocabulary acknowledges vocabulary acquisition as a complex process that involves establishing relationships between concepts, organization of concepts, and expansion and refinement of knowledge about individual words" (p.7). It is through this framework that the present research study was conducted. This study was completed in three phases. Phase I involved the collection of pre data regarding teachers and students perceptions using

quantitative and qualitative data collection methods. Teachers also engaged in professional development aligned to the interactive word wall instructional framework. In phase II, teachers implemented the interactive word wall focusing on student word learning. Phase III focused on post interviews and surveys related to the interactive word wall instructional design framework.

Conclusions

Certain conclusions and implications can be formed based on the findings of this study. Based on the research findings, the following main conclusions can be drawn: (1) Teachers and students shared positive perceptions of the interactive word wall strategy, (2) Teacher resistance to vocabulary instruction decreased over time as they adapted the interactive word wall strategy to meet their specific content goals, (3) Choice was an important factor in student motivation, and (4) Students' word knowledge broadened and deepened during this study.

Positive Perceptions

The results of the data analysis presented in chapter four indicated positive teacher and student perceptions towards an interactive vocabulary strategy--the interactive word wall. Teachers felt the interactive word wall instructional framework was effective and a helpful strategy in helping students learn content specific words. Teachers perceived the interactive word wall as a tool to help students make connections and apply the words instead of short-term memorization. Students made connections by creating symbols, sentence completions, situations and accompanying sentences. Research has shown that this rich vocabulary instruction promotes students'

comprehension and use of words beyond simple tasks (Beck et al.1982; McKeown, Beck, Omanson, & Pople, 1985; Mezynski, 1983; Stahl & Fairbanks, 1986).

Results from this study seemed to demonstrate that teachers and students became more conscious of words. The importance of promoting word consciousness as a necessary part of vocabulary instruction has been well-documented by researchers (Anderson &Nagy, 1992; Beck, McKeown & Kucan, 2002; Blachowicz & Fisher, 2004; Graves & Watts-Taffe, 2002; Kame'enui & Baumann, 2004; Nagy, 2005; Scott & Nagy, 2004). Word consciousness is when students are interested and aware of words (Anderson & Nagy, 1992; Graves & Watts-Taffe, 2002) and noticing when and how new words are used (Manzo & Manzo, 2008). Most students were motivated to learn new words, complete the tasks related to the interactive word wall instructional design, and use those new words across different contexts.

Another aspect of fostering word consciousness is creating a word-rich environment (Graves & Watts-Taffe, 2002). All teachers created physical space in their classroom for a word wall, which students helped to create and maintain throughout this study. This space included the words students were studying in-depth, as well as pictures and examples of using the word. Teachers also provided dictionaries, thesauruses, and computers to further promote a word-rich environment in the classroom.

Yet another aspect of promoting word consciousness is recognizing and promoting adept diction (Graves & Watts-Taffe, 2008). This was seen when teachers and students explained the meaning of new words, extended the meaning of words by providing multiple examples, and making connections with words by using real

situations. Also, group discussions of new words were evident throughout this research study when students presented their words and accompanying tasks to the class.

Marzano (2007) explained the importance for students to interact with content, teachers, and other students as hallmark to effective vocabulary instruction. Teachers believed that students increased their knowledge of words due to multiple interactions with the target words, interactions with other students, and interactions with the teacher. This is aligned to the sociocultural approach to learning in which students collaborate to engage in the process of co-constructing knowledge. The knowledge, skills and information needed for learning were appropriated through guided participation in shared activity (Alfred, 2002; John-Steiner & Mahn, 1996; Putnam & Borko, 2000; Rogoff, 1990; Whipp, Eckman, & van den Kieboom, 2005). During the instructional design, students were given an opportunity to work and learn from each other instead of a more teacher-centered approach to learning. Therefore, teachers felt the student interaction helped students understand the words at a deeper level.

The findings also revealed that students perceived the interactive word wall instructional design more effective in learning vocabulary compared to their typical instruction that focused on copying down a definition of a target word. Some students explained that their traditional vocabulary instruction did not help them because they did not understand the words used in the definition. By using the interactive word wall and working in groups, students felt their word knowledge increased. This confirms Nagy's (1998) previous findings that demonstrate dictionary definitions often fail to account for the gaps in student's vocabulary knowledge and cannot include all the necessary

information about the word. Students also felt that they learned more words because the interactive word wall instructional design was fun and interactive.

Additionally, students enjoyed the opportunity to work with other students to create their own representations of word meanings. This further supports previous research using the keyword method, in which students create a mental association for a word by creating an illustration, as an effective vocabulary strategy to help students learn labels for new words (Baumann & Kame'enui, 1991; Baumann, Kame'enui, & Ash , 2003; Graves, 1986; Stahl & Fairbanks, 1986; Uberti, Scruggs, & Mastropieri, 2003). Specifically, students reported being able to make connections, illustrate, and create new representations as characteristics that helped them learn new words. This is similar to Marzano's (2004) research on the effectiveness of using graphic or picture representations to explain new terms. Roe and colleagues (2005) also highlighted the importance of presenting visual images with the words and having students create their own visual images for new words.

Teacher Resistance

Research has documented content area teacher's resistance to integrating literacy in their content area (O'Brien & Stewart, 1990; O'Brien et al., 1995). In this study, teacher resistance to vocabulary instruction decreased over time as they adapted the interactive word wall strategy to meet their specific content goals. The teachers participating in this study initially shared concerns they had prior to using the interactive word wall- the amount of time needed to implement the instructional design, the amount of steps involved in the design, and students ability to successfully complete all the tasks. Many of the initial concerns stemmed from their anxiety of using a new vocabulary

strategy that was unfamiliar to them. Some teachers were hesitant in modeling the tasks for students and gradually releasing them to complete the tasks in their groups. At first, some teachers orally gave students directions without modeling the expectations. As the study progressed, teachers' attitudes began to change because they felt more comfortable using the interactive word wall instructional framework. By the end of the interactive word wall instructional design, teachers began using more direct instruction with students by directly explaining the purpose, continuous modeling, and gradually releasing students to complete the tasks.

Throughout the study, there was an increase in teachers' sense of self-efficacy, which also decreased their resistance to the interactive word wall instructional design. Self-efficacy is defined as a teacher's perception in his or her ability to impact student learning (Ashton, 1984; Smylie, 1988). As teachers advanced their understanding and use of the interactive word wall, their perceptions about how they can impact vocabulary learning increased and their resistance to the new approach decreased.

Bandura (1997) explained four areas of efficacy: personal mastery experiences, vicarious experiences, social persuasion and physical responses. Throughout this study, teachers' self-efficacy developed from three of the main sources. The first source is personal mastery experiences. Teachers had multiple opportunities to use the interactive word wall strategy with their students which increased their understanding and use of the strategy. Although teachers had some difficulties in the beginning, they all continued to develop their understanding of the interactive word wall throughout this study. Those experiences lead to aspects of successful implementation of the interactive word wall instructional framework. The second source was through social persuasion. Social

persuasion refers to encouragement from others. Teachers received support and feedback from me every week. The feedback provided teachers with an opportunity to enrich their understanding and use of the interactive word wall. There were also several instances in which students praised teachers for using the interactive word wall strategy. The final source was the physical and emotional responses. Teachers saw students' use and understanding of content specific vocabulary increase over time due, in part, to the interactive word wall strategy. Teachers also noticed that student engagement and motivation to complete tasks increased during this study. These factors increased teachers' beliefs that they could successfully implement the interactive word wall strategy. Tschannen-Moran and McMaster (2009) explained teachers' self-efficacy was the most powerful influence towards implementing a new instructional practice. By the end of this study, teachers had a deeper understanding of the interactive word wall strategy, which created higher levels of self-efficacy and decreased resistance.

Another important aspect related to teachers overcoming their resistance to this interactive vocabulary strategy was their ability to make several adaptations. Teachers also decided to make several adaptations to the original interactive word wall instructional design in order to better meet their students' needs. The adaptations allowed for more teacher ownership of the interactive word wall strategy. Teacher adaptations were mostly in their delivery of the instructional design, such as modeling, scaffolding, and use of technology. All teachers decided to spend more time working with the words than originally planned. This decision was based on their knowledge and understanding of their students' needs. Post interviews revealed that most teachers would continue using

their adapted version of the interactive word wall as part of the content area instructional design.

Although resistance decreased over time, there were several factors which served as resistance to the interactive word wall strategy. Research provides several reasons regarding content-area teachers' resistance to infusing literacy strategies in their teaching. These include: 1) teaching traditions within and across middle and high school subject areas (O'Brien et al. 1995), 2) teacher beliefs about the roles and responsibilities of content area teachers (O'Brien et al., 1995), and 3) a lack of confidence on the part of content area teachers in teaching literacy (Greenleaf, Schoenbach, Cziko, & Mueller, 2001). Overall, all teachers showed interest during the professional development training sessions. However, once they returned to their classrooms, there were issues that kept some teachers from fully implementing the interactive word wall. The structures in place in some classrooms were traditional and teacher-centered, which caused some difficulties in implementing the interactive word wall instructional design. Mr. George and Ms. John used more of a teacher-centered approach to instruction in which information was disseminated through direct instruction. O'Brien and colleagues (1995) explained that a shift from teacher-centered styles to student-centered styles could cause some resistance in teachers.

Also, some teachers lacked the confidence in their ability to fully integrate the interactive word wall instructional framework. For example, Mr. George struggled during the first four weeks in his understanding and use of the interactive word wall in his classroom. This lack of confidence caused Mr. George to simply tell and assign parts of framework for students to work on during class time. Research indicates that content

area teachers typically use the instructional context approach (Herman & Dole, 2005) or definitional approach (Ogle & Blachowicz, 2002) in their content area. The context approach consists of using sentences in the teacher's edition to introduce vocabulary before students read the selection. Students are either told what the word means or they use context clues to figure out the meaning of the word. The definitional approach requires students to look up the definitions of preselected words. Both approaches require background knowledge of the topic in order to use the context of the sentence or to select the correct meaning in the dictionary. Although Ms. John attempted to use the interactive word wall instructional design, she reverted back to her typical vocabulary activities including crossword puzzles and word searches. Marsh (1999) explained that teachers are sometimes labeled as "resisters' because they adopt a cautious attitude towards reform. In this era of school-wide reform, teachers are being asked to continually change based on outside agencies (Hargreaves & Goodson, 2006); it is not uncommon for teachers to become resistant.

The National Reading Panel Report [NRP] (2000) identified lack of vocabulary knowledge as a key element to school failure. Although the teachers felt the interactive word wall has potential in enhancing student's vocabulary knowledge, some teachers felt that their main goal was to cover the content in their curriculum. Pressures to teach subject area content as efficiently as possible can limit a teacher's willingness to abandon their traditional methods of teaching (Cantrell, Burns, & Callaway, 2009). Some teachers felt that they would not have enough time to carry out all the phases of the instructional design due to demands in the curriculum. Sturtevant (1993) explained that lack of time due to multiple demands placed on teachers could lead to resistance. Some teachers felt

the pressures of their mandated curriculum would not leave enough time to use the interactive word wall on a consistent basis. Ms. Chemical explained that she feels the interactive word wall is an important tool, but time is a major issue in her classroom because she teaches a tested subject area.

Furthermore, research has shown that content area teachers have been resistant because they question the efficacy of literacy instruction for their classrooms as well as their ability to deliver the instruction (Draper, 2008; Greenleaf, Schoenbach, Cziko, & Mueller, 2001). As seen with this study, although the teachers were participating in professional development and employing one strategy, they possibly did not fully understood the potential the strategy could have in improving student learning and academic achievement. Therefore, professional development in literacy instruction for content area teachers should begin with an examination of why and how strategies can facilitate content-area learning (Jacobs, 2008). This could improve content area teachers' ability to help their students understand the discipline specific content. Change in teacher practice requires extensive modeling and demonstration, as change requires opportunities to practice, apply, critique, and modify the techniques (Anders & Levine, 1990). This is where my role as a literacy coach could help deepen teacher's knowledge and understanding of vocabulary strategies. Teachers need extensive, varied and ongoing opportunities to see the new strategies implemented in their classrooms. As a literacy coach, my role is to demonstrate and guide teachers' implementation of the new learning techniques.

Choice was an Important Factor in Student Motivation

Findings from this study indicated that student motivation was an important factor in the implementation of the interactive word wall instructional design. Students felt a sense of control over their learning, and this motivated the students to complete the vocabulary related tasks outlined in the instructional design. They were given choices over their learning, which is tied to intrinsic motivation (Cordova & Lepper, 1996; Reynolds & Symons, 2001). When students are intrinsically motivated, they are motivated within to complete an activity. The interactive word wall instructional design provided a more student-centered approach to vocabulary learning.

Abbott (2000) and Ivey and Broaddus (2001) explained that adolescents' motivation increases when they have some autonomy, a need partially satisfied by choices. The students seemed to demonstrate self-awareness when reporting what they liked about the interactive word wall instructional design. The students reported that they liked the opportunity to self-select words, work with their classmates and create their own representations of words. Giving students the opportunity to self-select words increases their motivation to learn (Biancarosa & Snow, 2004; Harmon et al., 2008).

Word Knowledge Broadened and Deepened

Based on the findings from this research study, students were able to demonstrate a level of understanding of word meanings and were able to successfully apply them to meaningful prompts. Students learned from their experiences working with the words, the classroom environment, and through connections to words they already knew. This mirrors Vygotsky’s (1978) framework in which social interaction is vital in the development of understanding and knowledge.

This study further supported the importance of active learning, engagement and participation with the content matter. Repeated exposures to words in rich contexts with active student engagement are key to vocabulary instruction (NICHD, 2000). Direct observational data indicated that students were likely to engage in behaviors that required social interaction with their peers and teacher.

The results also suggest transference of vocabulary knowledge when students had multiple opportunities working with the words as well as creating definitions based on words they already knew. Stahl and Fairbanks (1986) explained that instruction needs to include multiple exposures to words in order to influence comprehension. In this study, students had multiple opportunities to work with the new vocabulary by completing the tasks that required students to explore, evaluate, reflect, and apply word meanings in a meaningful context.

Stahl and Fairbanks (1986) explained that comprehension involves a breadth of information, as students move beyond basic definition of words, into actual application of the words. The students in this study demonstrated their conceptual understanding of words by connecting a color to the word, drawing a symbol, writing sentence completions, creating situations and accompanying sentences. Several students reported that they were able to remember the words more in-depth by using the picture to trigger their memory of the definition.

Implications

Students must understand content area vocabulary in order to learn and be successful in that content area. Several implications can be gleaned from this study that could positively affect students' word learning in content areas. The value of integrating

literacy instruction in content area classes in order to improve literacy and content area learning for students is well-documented (Anders & Levine, 1990; Bean, 2000; Dishner & Olson, 1989; Herber, 1970; Moore, Readence & Rickelman, 1983). This study implies that this type of professional development helps teachers' integrate literacy and vocabulary support that could benefit student learning of content-specific concepts. The findings from this study also support the conclusion that incorporating explicit vocabulary instruction is effective in increasing students' word knowledge. Also, the results imply that teachers must consider student involvement as a tool for motivation in vocabulary learning.

Teacher Support

Findings from this study indicate that teachers need continuous support and coaching so their needs, as well as students' needs, are being met during the implementation of a new strategy. Several studies have examined the sustained use of effective strategy-based interventions that revealed support was needed in order for teachers to understand and implement strategies effectively in their classrooms (Hilden & Pressley, 2007; Pressley & El Dinary, 1997). Prior to teacher implementation of the interactive word wall, it was important for teachers to participate in professional development in order to fully understand and use the new strategy.

The professional development also needs to be ongoing in order to see teacher practice improve. The two days of professional development may not have been sufficient time for teachers to gain a full understanding of the purpose and implementation of the interactive word wall tool. Pressley and El Dinary (1997) found that in order for teachers to adopt research-based strategy instruction they needed to be

assisted a great deal. Although I constantly emphasized to teachers that I was there to support them with using the interactive word wall, they only asked for assistance when creating the series of quizzes. I believe that my roles as the researcher and the professional developer may have created confusion or a barrier for some teachers. As the researcher, I may not have been able to provide enough support for the teachers to implement the strategy to the degree that will affect teacher change. For example, it is likely that Mr. George was not provided enough support at the beginning to advance his knowledge of the interactive word wall instructional design. Previous research indicates teachers' attitudes can change if they are provided appropriate support (Dupuis, Askov, & Lee, 1979; Wedman & Robinson, 1988). It appears that the teachers could have benefited from more ongoing support from me as the literacy coach and not the researcher. I see this as a limitation of this study but not an issue that undermines the findings.

Explicit Instruction

Results from this study also suggest that intentional and explicit instruction may help students develop a larger more sophisticated vocabulary. Research regarding effective teaching practices has consistently shown students benefit from explicit vocabulary instruction in helping them expand their word knowledge (Beck et al., 1987; Hinkel, 2006; Nation, 2005). Explicit vocabulary instruction of key vocabulary towards enhancing students' acquisition of word learning has been well documented in the research (Baumann et al., 2003; Fukkink & de Glopper, 1998; Harmon et al., 2005; Jitendra et al., 2004; & NRP, 2000). This includes direct presentation of word meanings, as well as extensive teacher modeling of new vocabulary in multiple contexts. Strategic use of instruction is vital in the implementation of the interactive word wall instructional

design. Without proper explanation and modeling for students, the tasks involved in completing the interactive word wall instructional design would be difficult for students to complete.

Research (Goerss, Beck, & McKeown, 1999) also supports active learning of new vocabulary in which students make associations between word learning and their experiences, as well as opportunities to practice, apply, and discuss their word learning. The results from this study suggest that students were able to expand their knowledge of word meanings by actively interacting with the words at a deeper level. Students completed multimodal tasks such as writing the definition, constructing a visual image, associating colors with the word, writing sentence completions, and creating and describing a situation which promoted recall of the definitions. This deeper processing of words may increase student's ability to learn the meanings of unknown words independently and incidentally by focusing more closely to individual words and their use (Baumann et al. 2003). Therefore, it is important that teachers give students opportunities to explore word meanings through rich and varied experiences.

Student Motivation

Another implication of this research is that motivation is an important factor in student outcomes. Guthrie and Wigfield (2000) explained, "motivation is crucial to engagement because motivation is what activates behavior" (p. 406). The students in this study reported the importance of making choices over their learning, as well as assuming responsibility over the vocabulary to be learned as important factors motivating them during the instructional design phase. Giving students opportunities to self-select words,

work in groups to discuss and apply their words, and present to their peers are important motivating factors.

Guthrie, Schafer, Wang, and Afflerbach (1995) found social interaction to be a powerful role in adolescent literacy acquisition. Social interaction in this study played a significant role in student motivation and achievement. In all classrooms, students were given the opportunity to work with other students to clarify, extend, and reinforce word meanings. Teachers need to be sensitive to giving students choice in their learning as well as opportunities to collaborate with their peers.

Limitations

Creswell (2002) noted, "Limitations are potential weaknesses or problems with the study that are identified by the researcher" (p. 253). I identified four potential limitations of this study. First, as a literacy coach in the public middle school that was under study, I am a colleague of the teacher participants. Although I sought to reassure participants in the study regarding confidentiality, the potential existed for participants to harbor concerns about this issue. Moreover, I was honest with teacher participants about my bias towards student-centered practices and vocabulary instruction that goes beyond the traditional definitional approach. In order to mitigate these concerns, I continually emphasized confidentiality with participants as well as performed member-checks after I transcribed the interview data. I took care in drawing conclusions based on the data I collected not preconceived ideas of what I thought the data should say.

Secondly, the purposeful sampling strategy used in this study narrows the range of participants, so caution must be used in generalizing the results of this study to other populations. Respondents for this study were selected based on the shared, common

characteristic that they were all teachers of middle school students in a single urban school; however, because the sample was drawn from a single middle school, the findings cannot be generalized to other sights but offer a promising example that needs further study.

The relatively small sample size is another limitation to the study. While positive results were obtained, a larger group size may possibly exhibit more diverse perceptions related to the interactive word wall. Additional studies including a larger group size would need to be completed to examine and describe a diverse perspective of the interactive word wall.

Lastly, the duration of this study poses a challenge in that it lasted for such a short period (six weeks). Ideally, the study would have spanned a semester or full year. The students were going on fall break for two weeks; thus, it was decided by the principal, teachers, and researcher that the study would only last for six weeks.

Future Research

There are several areas for future research that could expand my research findings. First, the students in this study were selected from one middle school in one school district in the southeastern United States. Therefore, middle school students in other schools with similar demographic compositions could be studied to determine if similar results are presented in other school environments. Additional studies could provide information that could be applied to policies and procedures beyond the local school level.

Next, it would be important to see if these findings exist for others groups of students. Students participating in this study were primarily minority and were struggling

academically. Therefore, researchers should consider replicating the study with other groups of students such as advanced level students and other dimensions of diversity.

Additional research exploring content area teacher's resistance to content literacy and ways to overcome the resistance is warranted. Investigations need to examine overcoming content area teachers' resistance to vocabulary instruction. Pre and in-service courses and teacher in-service are the primary means for infusing content literacy into all content areas (Anders & Levine, 1990; Samuels & Pearson, 1988; Siedow, Memory, & Bristow, 1985; Singer & Bean, 1998). These efforts have produced limited success and only isolated changes (Alvermann & Moore, 1991; Langer & Applebee, 1987; O'Brien, 1988). Therefore, research connected to vocabulary research, professional development and classroom practices would further inform the field. Research has shown that teachers still rely on traditional practices (RAND Reading Study Group, 2002). Teachers should also be brought into the discussion and collaboration to support students in building their vocabulary.

Continued research is also necessary in the area of increasing the vocabulary levels of students, especially for those students who have a limited vocabulary. Additional research supporting ELLs in learning content area vocabulary is necessary. Ultimately, vocabulary is critical to a student's ability to develop and improve their knowledge, as well as gain access to meanings of words they read.

Summary

Vocabulary is critical to a student's ability to develop and improve their knowledge, as well as gain access to meanings of words they read. Since the strong correlation between comprehension ability and vocabulary knowledge has been

established, vocabulary knowledge is vital for academic success (Baker, Simmons, & Kame'enui, 1998; Cunningham & Stanovich, 1998). This qualitative case study adds to the existing literature on content area vocabulary instruction by documenting the perceptions and experiences of teachers and their students use of an interactive vocabulary strategy- the interactive word wall. Examining teachers' and students' perceptions, use and adaptations of an interactive vocabulary tool as the focal point of systematic instruction in a content area classroom is crucial in improving vocabulary instruction and learning. The interactive word wall is one strategy that has the potential to increase word learning in content area classrooms. Exposing content area teachers to vocabulary strategies that require students to actively construct meaning is vital in improving vocabulary acquisition of adolescents

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APPENDIX A: IRB APPROVAL

UNC CHARLOTTE

Compliance Office / Office of Research Services

9201 University City Boulevard, Charlotte, NC 28223-0001
t/ 704.687.3311 f/ 704.687.2292 www.research.uncc.edu/comp/complian.cfm

Institutional Review Board (IRB) for Research with Human Subjects

Certificate of Approval

Protocol #	**10-08-01**		
Protocol Type:	**Expedited**	7	
Title:	**The Effects of an Interactive Vocabulary Strategy on Teachers' and Students' Perceptions of Word Learning**		
Initial Approval:	**8/18/2010**		
Responsible Faculty	**Dr. Karen**	**Wood**	**Reading & Elem Educ**
Investigator	**Ms. Kendall**	**Latham**	**Middle, Secondary, K12 Educ**

After careful review, the protocol listed above was approved by the Institutional Review Board (IRB) for Research with Human Subjects. This approval will expire one year from the date of this letter. In order to continue conducting research under this protocol after one year, the "Annual Protocol Renewal Form" must be submitted to the IRB. This form can be obtained from the Office of Research Services web page. (www.research.uncc.edu/comp/human.cfm).

Please note that it is the investigator's responsibility to promptly inform the committee of any changes in the proposed research prior to implementing the changes, and of any adverse events or unanticipated risks to subjects or others. Amendment and Event Reporting forms are available on our web page at http://www.research.uncc.edu/Comp/human.cfm.

Dr. M. Lyn Exum, IRB Chair — Date 8/19/10

APPENDIX B: STUDENT SURVEY

Background Questions					
1. I feel that it is important to have a large vocabulary	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
2. I like learning new words.	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
3. I think about the vocabulary used in my classes (i.e., science, social studies, math, and language arts	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
Research Question 1: How do specific content area teachers and students perceive interactive word walls as an instructional tool for enhancing vocabulary learning					
4. My teacher uses a word wall in the classroom.	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
5. I use the words from the word wall.	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
Research Question 2: How do specific content area teachers and students modify, adapt and use an interactive vocabulary strategy, the interactive word wall, as a tool for creating a word-rich environment?					
6. My teacher selects the words for the word wall.	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
7. I have opportunities to self-select words for the word wall.	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
8. My teacher refers to the words on the word wall every day.	Always	Often	Sometimes	Seldom	Never

	①	②	③	④	⑤
9. My teacher connects new words on the word wall to words that I already know.	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
10. I have opportunities to work in groups to discuss words from the word wall.	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
11. I have opportunities to work in groups to discuss words from the word wall.	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤
12. The word wall in my classroom has color and pictures.	Always ①	Often ②	Sometimes ③	Seldom ④	Never ⑤

APPENDIX C: KNOWLEDGE RATING SCALE

Word	Know It Well	Have Seen or Heard It	No Understanding	Define the Word

APPENDIX D: TEACHER INTERVIEW PROTOCOL

Pre-interview

Use a picture of a word wall.

Word Wall Form

1. I took this picture in a classroom. How would you describe this?

Function and Use of Word Walls

2. What do you think is the purpose of this word wall?

3. Why would a teacher use this?

4. When would a teacher want to use a word wall?

5. When would you use it?

6. What would students learn from a word wall?

Valuing word wall (teacher, other students, self)

7. Is this important in a classroom?

8. Would this be important to you? Why or why not?

Post-interview

l. What were your first impressions of the interactive word wall instructional framework?

Function and Use of Word Walls

2. What was the purpose of the interactive word wall?

3. Why would you want to use it?

4. When would you want to use it?

5. What would students learn from using it?

Valuing word wall (teacher, other students, self)

6. Is the interactive word wall important in a classroom?

7. Is it important to you? Why or why not?

8. Will you use it again?

Critical Stance

9. What did you like about the interactive word wall?

10. What did you not like about the interactive word wall?

11. What changes did you make during the intervention? Why? Were they useful?

12. What would you change if you use the interactive word wall again?

Hoffman, J.V., Sailors, M., Duffy, G.R., & Beretvas, S. N. (2004). The effective elementary classroom literacy environment: Examining the validity of the TEX-IN3 observation system. *Journal of Literacy Research, 36*(3), 303-334.

APPENDIX E: STUDENT INTERVIEW PROTOCOL (PRE AND POST)

Use a picture of a word wall.

Name_____ Code _____ Date_____

Grade_____

Interviewer_____

1. I took this picture in a classroom. What is this?

2. Tell me how this works.

Function of Word Wall

3. Tell me what it is for.

4. Why would someone use this?

5. What would you learn from this?

Word Wall Use (teacher, other students, self)

6. Who uses this?

7. When do they use it?

8. When would you use it?

Valuing word wall (teacher, other students, self)

9. Is this important in a classroom?

10. Would this be important to you? Why or why not?

Critical Stance

11. What is the quality of this? Or is this a good one?

12. What makes it so?

13. Is it interesting? Thoughtful? Helpful? What makes you say that?

14. What would you change?

POST STUDENT INTERVIEW PROTOCOL

Use two pictures of word walls.

Name_____ Code _____ Date_____

Grade_____

Interviewer_____

1. What is the difference between these two pictures?

2. Which one is more helpful? Why?

Function of Word Wall

3. Tell me what the colors are for.

4. Tell me what the pictures are for.

Word Wall Use (teacher, other students, self)

5. Did you use the word wall?

6. When did you use it?

7. How did you use it?

Valuing word wall (teacher, other students, self)

8. Was the word wall helpful to you? Why or why not?

9. What was the most helpful part of the word wall?

Critical Stance

10. How did you like studying vocabulary this way? What did you like (or not like) about it?

11. How did you like picking your words to study? What did you like (or not like) about it?

12. How did you like:

Using colors to represent word meanings?

Using symbols to illustrate word meanings?

Writing situations in which you would use the words?

13. What would you change?

Hoffman, J.V., Sailors, M., Duffy, G.R., & Beretvas, S. N. (2004). The effective elementary classroom literacy environment: Examining the validity of the TEX-IN3 observation system. *Journal of Literacy Research, 36*(3), 303-334.

APPENDIX F: PROFESSIONAL DEVELOPMENT SCRIPT

The following articles will be used to front load teacher understanding before we begin the professional development:

1. Harmon, J.M., Wood, K. D., Hedrick, W. B., Vintinner, J., & Willeford, T. (2009). Interactive word walls: More than just reading the writing on the walls. *Journal of Adolescent & Adult Literacy, 52*(5), 398–408.
2. Harmon, J. M., Wood, K. D., Kiser, K.E. (200). Promoting vocabulary with the interactive word wall. *Middle School Journal, 40* (3), 58-63.

*Participants were given the articles to read the before coming to the first day of professional development.

Day 1: Background of vocabulary instruction and learning

"For the next six weeks I will be introducing, modeling, and supporting your use of the interactive word wall in your content area. The instructional framework consists of building background information about selecting words, introducing words, making connections with words, applying words to real situations, and presenting the words."

"I would like to first spend some time talking about the articles I gave you to read. All of the articles explain effective practices that are needed to impact vocabulary learning. Let's spend some time talking about the articles." I will use the following questions to guide the discussion:

1. What is effective vocabulary instruction?
2. Why is vocabulary instruction important?

3. Describe something that stood out to you in the reading.
4. Tell me something that you have a question about.

"To sum up the readings and our discussion, we will use the following vocabulary instructional guidelines to guide the instructional framework:

1. Select words for vocabulary instruction that come from texts students will read in the classroom. The teacher, student, or a combination of the two can select these words. Using words selected from texts students will read helps make the meaning of words relevant to the context in which they appear and build connections between existing knowledge and new knowledge. Students encounter a new word in a confirmatory manner rather than merely an unknown word.

2. Base instruction on language activities as a primary means of word learning. The focus of the activities should be on engaging the students in generating the learning of new words to enhance remembering and deep processing of the words. Students should be provided multiple opportunities to use new words in their speaking, listening, reading, and writing activities.

3. Build a conceptual base for learning new words. Use analogies, language features, and other relationships to known words to activate students' background knowledge of concepts related to new words.

4. Provide a variety of instructional strategies to store word knowledge (mental pictures, visual aids, kinesthetic associations, smells, tastes, etc.).

The professional developer will spend some time talking about the importance of each component and will also ask for teachers to provide comments as well. (Blachowicz & Fisher, 1996; Blachowicz & Lee, 1991).

"I will now spend some time talking about the purpose behind the interactive word wall."

Goals of Interactive Word Wall

- Create interest in and motivation for learning new words
- Broaden vocabulary knowledge
- Deepen vocabulary knowledge

Effective vocabulary instruction:

- Moves beyond a superficial, definitional level of word learning
- Includes three features:
    - Integration
    - Multiple exposures
    - Meaningful use

Word walls:

- are a point of reference (focal point) for the vocabulary program
- incorporate the features of effective vocabulary instruction
- enable students to reflect, explore, and apply new word meanings

Are there any questions or concerns that you have so far?

We will now move to focusing on the interactive word wall instructional design. You have probably seen word or used word walls at some point during your educational career. For the purposes of this study, word walls are a point of reference for the vocabulary program, incorporate features of effective vocabulary instruction, and enable students to reflect, explore, and apply new word meanings." Can you explain what a word wall means to you?"

We will now work on the first component of the interactive word wall framework- word selection. I will pass out the reading selection and the self-selection word chart. To introduce the interactive word wall instructional framework, we used the following criteria for selecting words to study (Beck, McKewon, & Kucan, 2002 ;Graves, 2006): How useful is the word?, Can you use the word in different situations or

contexts?, Is the word used frequently?, Do you think the word can appear in different texts?, Is the word's meaning easy to explain in everyday language?, Does the word refer to something concrete or abstract?, Does the word have multiple meanings?, Does the word have multiple meanings? We then discussed how students should select words to study based on their current text. To end the first day of professional development, I asked teachers to read an article entitled "New Fad Makes Kids- And Teachers-Crazy" and select three words that would be important to study as a class. They also completed a chart that included the following columns: Word/Context in Which the Word was used/ Meaning of Word

To begin day two, I asked teacher to discuss their initial ideas, concerns, and questions using the interactive word wall. Using the power point, I explained and modeled all phases of the interactive word wall instructional framework using the word *entrepreneur* from the article (see Table 4).

Table 4

Instructional Framework for Professional Development

Instruction	**Materials**	**Example**
Introduce	• **Flashcard** • **Crayons** • **Poster chart**	**Word:** entrepreneur **Color:** yellow **Rationale:** Yellow represents creativity, energy, vitality, newness **Definitions:** Noun: A

		person who organizes, operates, and undertakes a new business
Connect	• **Index card** • **Poster chart**	**Symbol:** iPhone with several apps **Sentence Completion:** The *entrepreneur* was the first to create a digital news bullet application (for the smart phone in order to give customers up-to-date news). ”
Apply	• **Index card** • **Poster chart**	**Situation:** *Opening your own business* **Sentence*:*** *The female entrepreneur started a grocery delivery business for busy moms.*

I then had the teacher’s pair up and discuss their words they chose the previous night. They then had to decide on the top three words to study in-depth. As a group, we voted on the top four words to study. Using two words, each pair went through all steps of the instructional framework. They completed steps shown next in Table 5.

Table 5

Instructional Framework

Introduce	Select a color that represents the term. Make a connection to remember the word's meaning. One option is to refer to the color sheet handout. http://desktoppub.about.com/od/choosingcolors/p/color_meanings.htm Write the word on the note card and then color the note card with the representative color the group selected. Write 3-4 different ways to define the word. Write these on the group poster chart. formal definition description metaphor example contrast synonym origin antonym
Connect	Create a symbol to represent the word. This should be a simple drawing of an object or idea that relates to the word and helps you to remember the word's meaning. Draw the symbol on another note card. Develop 2 sentence completions for the word (Sentence stems that include the word and students have to complete the sentence). Write these statements on the group poster chart.

Apply	Think about a situation in which you would use the word. Then write a word or draw a symbol to represent the situation on a note card. Write the sentence to represent the situation on the group poster chart.

All pairs then presented their words and the information they compiled. I then answered questions about the implementation process and introduced them to the more specific teacher instructional framework and procedural steps.

Ongoing: The researcher will be available for support throughout the study. The researcher will also help teachers create weekly vocabulary assessments.

APPENDIX G: INTERACTIVE WORD WALL OBSERVATION DATA SHEET

Date _____ Observation #_____

Teacher: _____ Grade: _____Subject: _____Number of students: _____

Lesson objective:

_____

Text(s) being used (if any):

_____

Description of Word Wall

Describe word wall.	**Notes**
Location in room (accessibility to all students	
Number of words	
Information about words (symbols, definitions)	
Examples of use (situational contexts)	

Use of color	
Format (flash cards, big print, bulletin board, poster board)	
Size of word wall	

Instructional Use

Describe instruction.	**Notes**
What is the lesson? What is the teacher doing?	
What are the students doing? What is their level of engagement? Are students saying the words orally, writing the words, or are they	

listening and reading?	
How is the teacher connecting word wall use with the lesson topic? Is the teacher connecting the words to each other or already known words?	
How are the students reacting to the word wall use?	
Quotes from teacher and/or students	
What is the class format? (whole class, individual, student groups—how many students in a group?)	
Approximately how much time is spent on the word wall part of the	

lesson?	
What reinforcement activities are used with the word wall activities? (writing, reviewing of terms, extension vocabulary activities) Is this a student focus or teacher focus?	

Instructional Adaptations

Describe instructional changes made by the teacher	**Notes on changes**
Word selection Who selected the words—teacher or students?	
Introducing word meanings Who introduces the words? How are the words introduced? Use of color Multiple ways of	

defining word	
Connecting word meanings Use of symbols and rationale for symbols Examples of sentence completions	
Applying word meanings Examples of situations in which words are used Examples of sentences using the words	

Harmon, J.M., Wood, K.D., Hedrick, W.B., Vintinner, J., & Willeford, T. (2009). Interactive Word Walls: More Than Just Reading the Writing on the Walls. *Journal of Adolescent & Adult Literacy, 52*(5), 398–408.

APPENDIX H: LESSON PLAN

Building Background and Motivation

Day 1

In order to prepare students for the lesson, the teacher will discuss how to select a word by thinking about the different levels of word knowledge (Baumann et al., 2003):

Level 1: I have never seen this word

Level 2: I think I have seen this word, but I don't know what it means.

Level 3: I have seen this word, and it has something to do with…

Level 4: I know this word. I can use it in my speaking, reading, writing, and listening

The teacher will then model how to make word selections by using the following questions (Beck, McKewon, & Kucan, 2002; Graves, 2006):

- How useful is the word? Can you use the word in different situations or contexts?
- Is the word used frequently? Do you think the word can appear in different texts?
- Is the word's meaning easy to explain in every day language?
- Does the word refer to something concrete or abstract?
- Does the word have multiple meanings?
- Does the word have a prefix, suffix, or identifiable root?

The class will also brainstorm where to look for interesting words- books, the Internet, magazines, television, friends, parents, etc.

For homework, students will look for at least 3 words to put into a chart labeled, “Word/ Context in Which the Word Was Used/ Word’s Meaning.”

Day 2

Students will be placed in heterogeneously groups of 3-4 students. As a group, they will discuss their individual words and decide on the top 5 words every student should learn. Each group will present their words to the class and provide support on the importance of each word. The class will select the top 10 words to study in depth. The teacher will also add 2 words for word study. The teacher will then give each group 2 words to work on. The teacher will then model the following steps:

1. **Introduce words-** To introduce the word, the teacher will select a color to represent the word and define the word in at least 3 different ways (definitions, examples, synonyms, and antonyms). For example, for the mathematical word *adjacent.* Using a poster chart, the teacher will write the word, the color, and three ways to define the word.
2. **Making connections-** The teacher will create a symbol to represent the word (a drawing of an object or idea), as well as write 2 sentence completions. The teacher will explain the purpose of the symbol is to help students remember the word’s meaning. The symbol will go on the index card and the sentence completions will go on the poster chart.
3. **Applying the word to real situations-** The teacher will think of a situation or context for using the word. The teacher will model an illustration and the creation of a sentence for the situation.

4. **Presenting the Words to the Class-** The teacher will begin by putting the word on the word wall, explaining the color choice, and displaying the definition on the poster chart. Then, the teacher will show her symbol, explain the meaning, and pin it to the left of the word wall. Next, the teacher will display the sentence completion and ask students how to complete the sentence. The teacher will also share the real-life applications of the word.

*****The student groups will go through the instructional sequence modeled by the teacher: introducing the words, making connections with word, applying word to real situations, and presenting the words to the class. Each group will be responsible for 2 words.