THE PICTURE WORD INDUCTIVE MODEL AND VOCABULARY ACQUISITION

A Thesis by

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I have examined the final copy of this thesis for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the degree of Master of Education with a major in Curriculum and Instruction.

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ABSTRACT

The main purpose of this quasi-experimental study was to determine if students' vocabulary acquisition is enhanced with the picture word inductive model (PWIM), a research-based method of vocabulary instruction (Calhoun, 1999). Additionally, this research sought to identify if performances on vocabulary measures are related to performances on comprehension measures. Further, the study examined if the use of the PWIM impacts vocabulary and/or comprehension scores. Finally, this research focused on the possibility of the influence of language status on vocabulary and comprehension skills.

The experimental group of 14 second graders participated in the 4-week intervention, while the control group, consisting of 21 students from the other second grade classes, received typical classroom instruction without the intervention. Nine of the experimental group participants and 16 of the control group participants speak English as a second language.

To assess students' vocabulary knowledge, a researcher-generated assessment was administered prior to intervention (pretest) and immediately following intervention (post test). This assessment targeted some of the vocabulary expected to be suggested by students in the course of the project. Also, the Scholastic Reading Inventory was used to test comprehension.

The PWIM intervention was analyzed through parametric statistics by examining the vocabulary gains that participants made from the pre-assessment to the post-assessment. Results indicated that statistically significant differences were not achieved between the control and experimental group participants on the final assessment. Within the experimental group, statistically significant differences in vocabulary scores and comprehension scores were noted. Results also indicated that students' vocabulary gain scores and comprehension gain scores did not differ significantly based on language proficiency.

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LIST OF ABBREVIATIONS

ANOVA   Analysis of Variance

ELL   English-Language Learner

ESEA   Elementary and Secondary Education Act

ESOL   English for Speakers of Other Languages

ESL   English as a Second Language

IRA   International Reading Association

NCLB   No Child Left Behind

NICHD   National Institute of Child Health and Human Development

NIH   National Institutes of Health

NRC   National Research Council

NRP   National Reading Panel

PWIM   Picture Word Inductive Model

SRI   Scholastic Reading Inventory

TPR   Total Physical Response

CHAPTER ONE

INTRODUCTION

On January 8, 2002, President George W. Bush signed into law the No Child Left Behind (NCLB) Act, a climactic reform of the Elementary and Secondary Education Act (ESEA) of 1965 (International Reading Association [IRA], 2002). Reading First, a portion of the NCLB Act, has been enacted to provide federal money to increase the reading acquisition of children in high-poverty, low-achieving schools (IRA, 2002). The law requires that the federal funds be used to enhance reading instruction based on scientifically based reading research (IRA, 2002).

In 1997, the United States Congress asked the Director of the National Institute of Child Health and Human Development (NICHD) at the National Institutes of Health, in consultation with the Secretary of Education, to assemble a national panel on reading (National Reading Panel, 2006). Specifically, the goal of the National Reading Panel (NRP) was to evaluate the effectiveness of various approaches of reading instruction. The Panel consisted of 14 people, including scientists in reading research, representatives of colleges of education, teachers, administrators, and parents. For more than two years, participants on the Panel gathered information for the study. One method of gathering information was examining public databases to ascertain what research had already been completed on how children learn to read. A second method was learning from the public during public regional hearings about their needs and their comprehension of research on reading. Third, the Panel obtained the advice of education organizations which focus on reading. On April 13, 2000, the NRP completed its study with the submission of "The Report of the National Reading Panel: Teaching Children to Read," to the Senate Appropriations Committee's Subcommittee on Labor, Health and Human Services, and Education (NRP, 2006).

Guided by the National Research Council (NRC) Committee on *Preventing Reading Difficulties in Young Children*, the Panel focused on the following research topics: "Alphabetics, including the issues of phonemic awareness instruction and phonics instruction; Fluency; Comprehension, including vocabulary instruction, text comprehension instruction, and teacher preparation and comprehension strategies; Teacher Education and Reading Instruction; and Computer Technology and Reading Instruction" (NRP, 2006, p. 9).

The most essential components of reading, according to the Reading First legislation, are phonemic awareness, phonics, fluency, vocabulary, and comprehension. Phonemic awareness is "the ability to hear, identify, and manipulate the individual sounds, or phonemes, in spoken words" (IRA, 2002, p. 3). Similarly, phonics is defined as "the understanding that there is a predictable relationship between phonemes, the sounds of spoken language, and graphemes, the letters and spelling that represent those sounds in written language" (IRA, 2002, p. 35). When students proficient in phonics are able to read without frequently stopping to decode words, the result is known as fluency, which is "reading with speed, accuracy, and proper expression without conscious attention" (IRA, 2002, p. 83). Fluency also requires a substantial vocabulary, or "stored information about the meanings and pronunciations of words necessary for communication" (IRA, 2002, p. 112). Students who read with fluency and who have appropriate vocabulary knowledge can concentrate on reading comprehension, which is defined as "the construction of the meaning of a written text through a reciprocal interchange of ideas between the reader and the message in a particular text" (IRA, 2002, p. 137). When students have proficient skills in phonemic awareness, phonics, fluency, vocabulary, and comprehension, they are considered to be effective readers.

How do children become literate, effective readers? Watts-Taffe and Truscott (2000) cite essential understandings, gained by research, about literacy development:

1. reading, writing, listening, speaking, and thinking develop in an *integrated* manner (Au, 1998);

2. language and thought are *socially constructed* (Vygotsky, 1987);

3. language learning proceeds best when children use language for *meaningful purposes* (Au, 1998);

4. what constitutes meaningful language use is influenced by an *individual's prior experience, culture, motivation, and goals* (Delpit, 1995);

5. language learning proceeds best when children are encouraged to *take risks, experiment, and make mistakes* (Wells, 1986); and

6. *modeling and scaffolding* are critical to successful language learning (Roehler & Cantlon, 1997; Wood, Bruner, & Ross, 1976). (p. 258-259)

As a result of the NCLB Act and Reading First, more attention has been focused recently on enhancing reading instruction. After evaluating numerous methods of reading instruction, the National Reading Panel reported that the most vital components of reading include phonemic awareness, phonics, fluency, vocabulary, and comprehension. Mastering these skills benefits children in becoming effective readers.

CHAPTER TWO

LITERATURE REVIEW

Vocabulary

According to the National Reading Panel Report (National Institutes of Health, 2000), the importance of vocabulary instruction in students' reading achievement has been acknowledged for over 50 years. Recently, concern about literacy has focused on the large individual discrepancies of vocabulary abilities of young children starting school (Beck & McKeown, 2001). Numerous research studies have demonstrated the relationship of reading skill and vocabulary size (IRA, 2002). Biemiller (2003) described significant differences in vocabulary size among children already by the end of second grade. In his study, second graders in the highest quartile of vocabulary size demonstrated the knowledge of approximately 7,100 root words! By contrast, second graders in the lowest quartile had a vocabulary size of only 3,000 root words. When these second graders reached fifth grade, the students in the lowest quartile still had not learned even 7,100 root words. Therefore, since most vocabulary distinctions develop among individuals before third grade, at which point a significant disparity exists in the pace of word acquisition (Biemiller & Slonim, 2001), it is essential to begin building vocabulary knowledge when children are young. Estimates of the number of words that elementary students learn each school year vary from approximately 2,000 words (IRA, 2002) to 4,000 words (Johns & Lenski, 2005). Teachers would need to teach 22 new vocabulary terms every day of the school year in order for their students to learn 4,000 words during the year (Johns & Lenski, 2005). As a result, it is apparent that children learn vocabulary words both incidentally and intentionally.

Incidental learning occurs naturally, as students experience or read words, without specific vocabulary instruction. Biemiller (2003) explicated that vocabulary development and comprehension are both affected by home language support and by explicit instruction at school. Further, children from low-income families whose parents interact with them as much as wealthy parents interact with their children, possess as strong a vocabulary as children from wealthy families (Biemiller, 2003). The variable appears to be the number of words parents and children use in conversation, especially if "high-level words," which are not common words, are used and explained (Biemiller, 2003). In addition to conversation, children learn vocabulary words through read-alouds and independent reading (Brabham & Villaume, 2002). Students who choose to read a variety of texts frequently at school and at home are much more likely to develop rich vocabularies than their peers who avoid reading (Brabham & Villaume, 2002). Furthermore, sharing, investigating, and discussing experiences enhances the incidental development of vocabulary (Brabham & Villaume, 2002). Wordplay, including silly songs and rhymes, helps children enjoy and spontaneously play with language (Brabham & Villaume, 2002), consequently increasing incidental vocabulary development.

In addition to learning words incidentally, vocabulary can also be acquired intentionally. According to Biemiller (2003), most children learn root words in approximately the same order. Recommending that primary teachers spend at least 30 minutes daily to promote their students' vocabulary development since "building vocabulary is as important as learning to identify printed words" (Biemiller, 2003, p. 330), he emphasized the advantage of "teaching the words children commonly encounter, rather than uncommon and complex words" (p. 331). Furthermore, he suggested that teachers should make note of words that have been introduced, as well as the specific words retained by students (Biemiller, 2003). Explaining three vital sets of

literacy skills used throughout life, which include "*word identification* (phonemic awareness plus decoding), *morphological analysis* (applying knowledge of suffixes and prefixes to extend word knowledge), and simple *dictionary skills*," Biemiller (2003) asserted that in contrast to these skills, "building basic root word vocabulary requires *continuing* support, especially for less advantaged and lower-vocabulary children" (p. 330). Therefore, teaching vocabulary should always be a priority (Biemiller, 2003). Students often benefit from selecting their own vocabulary words (Brabham & Villaume, 2002). Teachers have recommended teaching words "thoroughly and in depth over time" (Brabham & Villaume, 2002, p. 266) as well as demonstrating particular strategies for solving problems, revising ideas of definitions, and using words appropriately (Brabham & Villaume, 2002). Also, "in explicit strategies instruction, teachers show students how to apply prior knowledge as they use context clues and break down word structures to figure out meanings" (Brabham & Villaume, 2002, p. 266). As students learn strategies, they develop increased independence in deciphering words, which also leads to a higher probability of incidental learning (Brabham & Villaume, 2002). Encouraging students to explore their own strategies is also beneficial. Asking "questions such as 'What do you think that means?' and 'How did you figure that out?' stimulates conversations that make strategies more visible and thus more powerful as tools for intentional vocabulary learning" (Brabham & Villaume, 2002, p. 266).

Children typically develop an understanding of vocabulary words gradually. According to Dale and O'Rourke (1986), there are four levels of word knowledge: "1. I never saw it before. 2. I've heard of it, but I don't know what it means. 3. I recognize it in context—it has something to do with… 4. I know it" (Stahl, 2003, p. 18). The understanding of a word increases as a person repeatedly encounters that word (Stahl, 2003). Indeed, "vocabulary knowledge seems to grow

gradually, moving from the first meaningful exposure to a word to a full and flexible knowledge," which "involves an understanding of the core meaning of a word and how it changes in different contexts" (Stahl, 2003, p. 19). This deep comprehension of a word requires "exposure to the word in multiple contexts from different perspectives" (Stahl, 2003, p. 19). To truly understand a word, it is necessary to have definitional knowledge and contextual knowledge, the combination of which leads to a rich vocabulary.

What is considered a rich vocabulary? According to Brabham and Villaume (2002), there are five major characteristics of a rich vocabulary. First, as hinted previously, students with a rich vocabulary know a substantial amount of words. Second, "a rich vocabulary embodies and reflects extensive and complex understandings of many different concepts" (Brabham & Villaume, 2002, p. 265). Children who enter school with prior knowledge of an abundance of words have a distinct advantage over those without such prior knowledge. Third, "a rich vocabulary means having deeply rooted, flexible understandings of concepts that words represent" (Brabham & Villaume, 2002, p. 265). For example, students who know the meaning of the phrase "a stray dog" can use that knowledge to understand the concept of "a stray hair" (Brabham & Villaume, 2002). Fourth, "a rich vocabulary is powered by a keen ability to use context to tease out important aspects of word meaning and subtle differences in word usage" (Brabham & Villaume, 2002, p. 265). For instance, these students are aware that it is appropriate to describe "watery eyes" or "watery woodlands," but inappropriate to refer to a "watery puddle" (Brabham & Villaume, 2002). Fifth, "a rich vocabulary is fired by a fascination with language that creates disposition and motivation for learning words" (Brabham & Villaume, 2002, p. 265).

The type of classroom environment can affect students' vocabulary acquisition. An "experience-rich environment" is essential, as "building new concepts through experience

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provides necessary foundations for learning new words" (Brabham & Villaume, 2002, p. 267). A "print-rich environment" has full bookshelves representing a variety of genres, reading levels, and reading materials, including books, magazines, and children's own writing (Brabham & Villaume, 2002). Similarly, a "language-rich environment" is a classroom "alive with probing and thoughtful conversations… [while students] share, explore, and refine their thinking" (Brabham & Villaume, 2002, p. 267) about many concepts. Finally, a "fascination-rich environment" where "eyes sparkle with insights, bodies and minds stretch with inquisitiveness, and voices are charged with energy" (Brabham & Villaume, 2002, p. 267) promotes vocabulary acquisition. In this type of classroom, rich in experience, print, language, and fascination, teachers themselves cherish and promote the joy of language, and their enthusiasm is contagious.

Reading Comprehension

The relationship between reading ability and vocabulary size is undisputed. Similarly, vocabulary knowledge is integral to reading comprehension. Reading comprehension has historically been considered the combination of two distinct skills: word knowledge, or vocabulary, and reasoning during reading (Davis, 1944; IRA, 2002). In fact, Chall, Jacobs, and Baldwin (1990) noticed that "disadvantaged students showed declining reading comprehension as their limited vocabulary came to constrain comprehension" (as cited in Biemiller, 2003, p. 324). If students cannot read or understand numerous specific words in a text, how can they interpret the meaning of the whole text? On the other hand, when students receive thorough vocabulary instruction, their reading comprehension improves (Pressley, 2001).

Language Status

According to the 2000 United States Census Bureau, 31.1 million people living in the United States had been born in a foreign country (Drucker, 2003). This figure has increased more

than 50% since 1990 and currently represents over 11% of the total population of the United States (Drucker, 2003). They are sometimes referred to as English-language learners (ELLs), English as a second language (ESL) students, or students of English for speakers of other languages (ESOL) (Gersten & Baker, 2000). For the purposes of this paper, these terms will be used interchangeably.

Language proficiency and literacy development are significantly related. Frequently, it is assumed that children who can demonstrate competency in communicating socially, such as on the playground or in the cafeteria, are also able to proficiently communicate academically in the classroom. However, social language utilizes gestures, body language, and facial expressions, all of which are clues beyond spoken language to emphasize the meaning of the message (Drucker, 2003; Watts-Taffe & Truscott, 2000). In contrast, academic language often lacks these nonverbal clues, focusing instead on the requirements of learning the academic content (Drucker, 2003; Watts-Taffe & Truscott, 2000). Further, although students develop social language skills in approximately two years, an average of five to seven years is necessary to develop proficiency in academic language skills (Watts-Taffe & Truscott, 2000). Additionally, language proficiency includes listening, speaking, reading, and writing skills; children develop these skills at varying rates and not always in the same order (Watts-Taffe & Truscott, 2000).

Learning a new language *and* learning a new culture simultaneously can be especially intimidating. Children who have recently immigrated from another country often feel lonely, frustrated, afraid, and exhausted mentally and emotionally (Watts-Taffe & Truscott, 2000). Teachers should validate the feelings and culture of ESL students by encouraging the child to develop peer relationships, by helping the child feel safe in the new environment, and by promoting multicultural education (Watts-Taffe & Truscott, 2000).

English-language learning should be integrated with the learning of academic content, rather than postponing grade level instruction until students demonstrate proficiency in English. Teachers can promote the use of skills and strategies of students' first language, which improves their acquisition of the second language. Strategies such as prediction, setting purposes for reading and writing, comprehension, and confidence transfer from students' native language to English (Watts-Taffe & Truscott, 2000). Similarly, if children who speak English as a second language (ESL) possess a substantial vocabulary in their original language, the acquisition of vocabulary in English occurs more quickly (Biemiller, 2003). However, Biemiller (2003) has discovered that, unfortunately, many ESL students in fifth or sixth grade are an average of two grade levels behind in vocabulary acquisition.

Scaffolding, providing contextual, social, and temporary frameworks to capitalize on students' strengths, can be used effectively to help ESL students acquire proficiency in English during integrated instruction (Watts-Taffe & Truscott, 2000). One area in which teachers can use scaffolding to benefit students' reading skills is in activating students' background knowledge. Activating background knowledge is widely accepted in all classrooms, but it is especially vital for ELLs due to cultural differences, which may affect comprehension of the text (Watts-Taffe & Truscott, 2000). Methods of activating background knowledge include graphic organizers, the language experience approach, and highly structured cooperative learning (Gersten & Baker, 2000; Perez, 2000; Schoen & Schoen, 2003; Watts-Taffe & Truscott, 2000). The teacher may need to connect students' prior knowledge and experiences with the ideas in the text (Perez, 2000). In all cases, teachers should purposely activate students' background knowledge.

Another area of using scaffolding to enhance literacy development is interactive communication. Interactive communication is enhanced by a supportive classroom environment,

which promotes discussion, risk-taking, and positive attitudes that each student is academically able to succeed (Watts-Taffe & Truscott, 2000). One suggestion for effective discussion is that an ESL student can be paired with a native-English speaker (Perez, 2000). Teachers and students should speak articulately and clearly in the classroom, oral and written directions should be available consistently, and routines and expectations should be established and modeled (Schoen & Schoen, 2003; Watts-Taffe & Truscott, 2000). Similarly, lessons should include the statement of lesson goals and step-by-step instructions with authentic, meaningful examples (Schoen & Schoen, 2003). Frequent, specific feedback is advantageous for both ESL students and students whose native language is English (Gersten & Baker, 2000). Incorporating verbal and nonverbal cues (Drucker, 2003; Watts-Taffe & Truscott, 2000) while reading aloud is another way to effectively build interactive communications and therefore enhance literacy development.

A final area of scaffolding to promote literacy is vocabulary development. Although vocabulary is usually one of teachers' major concerns for ESL students, it is crucial as students interact with text because "vocabulary is linked to the way information is stored in memory, and… is the means by which students express their thinking" (Watts-Taffe & Truscott, 2000, p. 262). Effective vocabulary instruction emphasizes "providing both definitional and contextual information about key words, elaborating on word meanings during teacher-led discussions, and providing opportunities for students to actively elaborate on word meanings themselves" (Watts-Taffe & Truscott, 2000, p. 262). Learning vocabulary is a major portion of successful programs for ELL students, but it is recommended that the number of new vocabulary words introduced at one time should be limited to seven or fewer terms in order to help ELL students achieve understanding of the words (Gersten & Baker, 2000). The selection of vocabulary words should focus on the key concepts of the text, usefulness in other situations, relevance to the overall

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academic subject, and meaningfulness in students' lives (Gersten & Baker, 2000). Additionally, distinguishing between instruction of a new word for a known concept and instruction of a new word for a new concept is vital, as is allowing enough time for concept development (Watts-Taffe & Truscott, 2000). When ELL students are familiar with a concept, it is often helpful for them to insert words of their first language into the discussion (Watts-Taffe & Truscott, 2000). If, however, the concept is unknown, it is advantageous to "provide examples and non-examples, incorporate drama and visual representations, and provide multiple encounters with the concept over time" (Watts-Taffe & Truscott, 2000, p. 262). Visuals such as gestures, graphic organizers, story maps, semantic webs, word banks, pictures, objects, and models, and drama activities, including pantomime, role-play, games, and Total Physical Response (TPR) can help ESL students process their new vocabulary words (Drucker, 2003; Gersten & Baker, 2000; Schoen & Schoen, 2003). Other strategies suggested to benefit ESL students in literacy and vocabulary development are previewing, choral reading, shared reading, paired reading, books with tapes, multicultural literature, and interactive writing (Drucker, 2003). Helping ESL students learn and understand vocabulary positively enhances their overall literacy development.

Vocabulary Interventions

In response to the need for increased vocabulary development among ESL students and native-English speakers, a significant amount of recent research has been devoted to the study of vocabulary interventions. Alber and Foil (2003) studied the effect of using drama activities to teach target vocabulary words. Brabham and Lynch-Brown (2002) examined students' vocabulary gains on three different types of teachers' reading-aloud styles: just reading, performance reading, and interactional reading. Uberti, Scruggs, and Mastropieri (2003) focused on the keyword method of mnemonic instruction to increase students' understanding of

particular vocabulary words. Gifford (2000) described several strategies of explicitly teaching

vocabulary, including the predicting pie, semantic feature analysis, hierarchical arrays/word map,

and vocabulary star. Winters (2001) explained vocabulary anchors as a process of connecting a

new target word to a familiar word, discussing similarities of the two words and unique

characteristics of the target word, and associating a specific personal experience with the new

word. Similarly, Nilsen and Nilsen (2003) advocated a source-based approach of helping

children see the relationships of words. Ainslie (2000/2001) called her students "word

detectives" who keep a list of "unknown suspects" (p. 360); her students write clues next to each

word, such as definition, context sentence, and part of speech. Beck and McKeown (2001)

constructed an approach to read-alouds entitled Text Talk, in which the teacher asks open

questions and leads discussion while reading aloud, and implements explicit vocabulary

instruction after each story. Robb and Prescott (1999) identified ideas including preteaching

vocabulary and using context clues to figure out unknown words as appropriate ways to build

students' vocabulary. Jongsma (1999/2000) connected vocabulary and comprehension,

describing how think-alouds can model for students how a proficient reader interacts with the

text and interprets the author's meaning. Krehel (2003) asserted that poetry performance

enhances vocabulary concept development, as well as comprehension and fluency. Additionally,

Wood (2001) explored the possibility that software programs and technology can increase

vocabulary development.

Picture Word Inductive Model

One research-based, instructional method of promoting literacy by teaching vocabulary is

the picture word inductive model (PWIM). This model was designed based on research about

how literacy is acquired (Joyce & Weil, 2004). According to Joyce and Weil (2004), "to become

an expert reader, people need to read a lot, develop large sight vocabularies, develop skill in phonetic and structural analysis, and learn to comprehend and use extended text" (p. 81). Specifically, children become literate in a series of steps. First, "children learn to listen and speak the languages spoken to them in a most natural way" (Joyce & Weil, 2004, p. 81). If their families use expansive vocabularies and complex syntaxes, then children also develop expansive vocabularies and complex syntaxes (Joyce & Weil, 2004). Second, "inductive thinking is built into our brains....children classify from birth, sorting out the world" (Joyce & Weil, 2004, p. 82). Third, "children seek meaning....they want to understand their worlds by organizing what they perceive, and they reach toward language as a source of meaning" (Joyce & Weil, 2004, p. 82). Fourth, "interaction with adults and peers is the natural avenue to socialization. Interaction through reading is an important part of socialization as the young reader encounters information and ideas" (Joyce & Weil, 2004, p. 82). The PWIM capitalizes on the natural ways that children approach the learning of language (Joyce & Weil, 2004).

Originally designed by Emily Calhoun as a major component of a language arts curriculum for beginning readers (Calhoun, Poirier, Simon, & Mueller, 2001), this model has several purposes. According to Calhoun (1999), the PWIM is used with "classes, small groups, and individuals to lead them into inquiring about words, adding words to their sight-reading and writing vocabularies, discovering phonetic and structural principles, and using observation and analysis in their study of reading, writing, comprehending, and composing" (p. 21). Specifically, "the PWIM is an inquiry-oriented language arts strategy that uses pictures containing familiar objects and actions to elicit words from children's listening and speaking vocabularies" (Calhoun, 1999, p. 21). Teachers can use the PWIM "to teach phonics and spelling both inductively and explicitly" (Calhoun, 1999, p. 21). Another "major principle of the model is that

students have the capability to make generalizations that can help them to master the conventions of language" (Calhoun, 1999, p. 21). Calhoun (1999) explained the basic lesson structure of the PWIM model:

> The instructional sequence of the model cycles and recycles through the following activities: The students study a picture selected by the teacher; identify what they see in the picture for the teacher to label; read and review the words generated; use the picture word chart to read their own sets of words; classify words according to properties they can identify; and develop titles, sentences, and paragraphs about their picture....The full sequence of a PWIM unit may take three days or two months: The length of units and number of lessons within a unit depend on the richness of the picture, the age and language development of the students, and the language objectives of the teacher. (p. 21)

While observing the model's benefits, Calhoun (1999) noticed that children generally savor the interactive lessons of the PWIM.

> Most beginning readers and writers...enjoy finding objects and actions in the picture, seeing the words and sentences they generate expressed in print and become part of the curriculum, classifying words and sentences, and discovering useful language concepts and generalizations. The PWIM motivates students because most become successful learners. Learners succeed using the model because the PWIM is based on inquiry into how children learn and how to enhance their learning, including their development of language, the process of learning to read and write, and the reading and writing connection. (p. 24)

Three teachers in Canada, a first grade teacher, a French immersion first grade teacher, and a fourth/fifth grade teacher for students with special needs, implemented the PWIM as action

research for an entire school year "to study and expand their literacy strategies and to watch the effects on their students" (Calhoun et al., 2001, p. 2). They came to use the PWIM "to support a multidimensional curriculum for teaching beginning reading and writing and for teaching information and concepts in social studies and science" (Calhoun et al., 2001, p. 2). They used the following process: The teacher presented a picture; students studied the picture and identified items in the picture. Drawing a line from the item in the picture to an area outside the picture, the teacher wrote the word, spelled it aloud, and asked students to repeat the word and its spelling. In the next lesson, students received their own sets of word cards and practiced reading the words. Students either recognized the words immediately, decoded them, or referred to the picture as an illustrated dictionary. Then students worked to "classify the words in terms of phonetic, structural, or content properties and share their categories and why they put a particular set of words together" (Calhoun et al., 2001, p. 3). Teachers selected particular categories for explicit instruction. After discussing and modeling the meaning of titles and sentences, they asked students "to generate titles that match the picture and factual sentences about the picture" (Calhoun et al., 2001, p. 4). Further, students classified the sentences into categories and shared the reasons for their classifications. Two of the teachers also published the sentences into small books for the children to read to their parents for practice and as a celebration of their reading accomplishments (Calhoun et al., 2001).

During their research, these teachers recorded their students' progress and their own reflections in PWIM implementation logs. One teacher reported that "more than 200 words were encountered in the first four months, and 90 percent of the students were able to recognize them automatically six months later" (Calhoun et al., 2001, p. 9). In the French immersion class, almost 500 words "were identified in the first semester, and all except one student recognized 95

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percent of them five months later" (Calhoun et al., 2001, p. 9). Throughout four cycles of the PWIM intervention, the fourth/fifth grade students with special needs generated and studied 182 words; from September to March, most of the students still retained at least 170 out of 182 words (Calhoun et al., 2001, p. 10). On the Canada Tests of Basic Skills, these students demonstrated significant gains on the vocabulary and comprehension subtests. In fact, the gains were "twice the gain of average students for a year, and eight times their own previous annual gain" (Calhoun et al., 2001, p. 11). If these students would make similar gains the following year, then they would be considered "average" students according to test scores (Calhoun et al., 2001).

At the end of the school year that Calhoun et al. (2001) had implemented the PWIM as action research, 22 first graders took the Alberta Diagnostic test, "which provided estimates of reading achievement in terms of grade levels" (Joyce & Weil, 2004, p. 81). They earned the following results:

Twelve of the students were well above the "ending grade 1" level. Two were at the mid-grade 6 level, three at mid-grade 4, six at beginning grade 3, and two at the end of grade 2. Six scored at ending grade 1 or beginning grade 2, and three at the mid-grade 1 level. The average was a little above the ending grade 2 level, where typical exiting grade 2 students score. (p. 81)

In their implementation of the PWIM, Calhoun et al. (2001) discovered that students achieved significant gains in reading skills, comprehension, and vocabulary. Highlighting both the mechanics of reading and writing, and the goal of using reading and writing to communicate meaning (Calhoun et al., 2001), these teachers advocated that the PWIM helps students increase literacy.

Since reading skill affects students' ability to learn, the importance of all components of reading will remain as a focus for teachers, administrators, and parents. Students will continue to expand vocabulary through both explicit and implicit instruction, and research of effective methods of teaching and promoting literacy will persist. Accordingly, it is essential to study and explore the PWIM to determine if it can indeed, with its cycles of inquiry, help students achieve significant gains in vocabulary development.

Given the importance of vocabulary knowledge to reading success and the potential risk ESL students face when learning to read, the research questions focused on vocabulary acquisition for ESL students and native-English speakers. Specifically, (1) how does PWIM instruction impact vocabulary acquisition compared to typical classroom instruction? Further, (2) are performances on vocabulary measures related to performances on comprehension measures? (3) Is this relation evident after controlling for language proficiency? (4) Does the pattern of relations vary as a function of group membership—experimental vs. control? Additionally, (5) does the use of PWIM impact vocabulary and/or comprehension scores? Finally, (6) are there differential effects of the intervention on vocabulary and comprehension skills based on language status?

CHAPTER THREE

METHOD

Participants

The sample of participants consisted of 35 second graders of low socioeconomic status from an elementary school in a Midwestern city. All participants were either seven, eight, or nine years old. The students whose parent or guardian signed the consent form participated in the research study. There were two groups of participants, an experimental group (n=14) who received the intervention, and a control group (n=21) who received typical classroom instruction, without the intervention. Nine of the experimental group participants and 16 of the control group participants speak English as a second language. Participants' reading levels range from early first grade to fourth grade.

Measures

Vocabulary. To assess students' vocabulary knowledge, a researcher-generated assessment (see Appendix A) was administered prior to intervention (pretest) and immediately following intervention (post test). This assessment, consisting of 37 vocabulary terms, targeted some of the vocabulary expected to be suggested by students in the course of the project. The researcher chose the vocabulary words for the assessment based on the possible vocabulary words that students might generate while looking at the PWIM pictures. A standardized vocabulary assessment, such as the Peabody Picture Vocabulary Test, was considered for the research study. However, scores were only available for students who had attended this school in kindergarten or first grade, and families of students at the school have a high rate of mobility. Additionally, it would have been time-consuming to administer this assessment individually.

Comprehension. To assess comprehension skills, the Scholastic Reading Inventory (SRI) was administered. The SRI is "a research-based, computer-adaptive reading assessment for Grades K-12 that measures students' level of reading comprehension and reports it using the Lexile Framework for Reading" (Scholastic, 2007a, p. 1). Automatically adjusting the level of difficulty of each question based on the individual's answers, this test employs only authentic text passages and "assesses students' reading levels, tracks students' reading growth over time, and helps guide instruction according to students' needs" (Scholastic, 2007b, p. 1). Comprehension skills tested include sequence, cause-and-effect, drawing conclusions, identifying details, and making comparisons and generalizations (Scholastic, 2007a). On the SRI, "internal consistency reliability scores produced by Cronbach's Alpha on the [school year] SY2001-02 reading test range from .87 to .91" (Knutson, 2006, p. 2). Further, "criterion-related validity of the SY2001-02 SRI scores was established by correlating both fall and spring SRI scores to the spring 2002 FCAT-SSS Reading [a criterion-referenced assessment to measure benchmarks from the Sunshine State Standards (SSS)] scores. The fall-to-spring correlations for Grades 3-10 range between .71-.76 while the spring-to-spring correlations range from .75-.82" (Knutson, 2006, p. 4). Additionally, "the correlation between the second-grade 2001 spring administration of SRI and the spring 2002 third-grade FCAT-SSS Reading was .72 (n=9,687)" (Knutson, 2006, p. 4).

Procedure

The vocabulary pretest and post test were administered individually. Each participant sat at a table in the classroom to read aloud the vocabulary words on the assessment to the teacher researcher. The assessment took approximately five minutes per student.

The comprehension pretest and post test were administered in the computer lab, with many students simultaneously taking the SRI test on computers. Students spent approximately 30 to 45 minutes on this assessment.

During instruction with the PWIM, students were shown a picture and were asked to identify items in the picture. The teacher (who is also the researcher and the author of this paper) wrote each identified word on chart paper outside the picture and drew a line from the word to the item in the picture. This process essentially created a picture-word dictionary which the students could employ to connect words with corresponding pictures (Joyce & Weil, 2004). (See Appendix B for the suggested lesson structure of the PWIM.) The PWIM intervention occurred four times per week for four weeks, and each PWIM session lasted approximately 20 minutes. According to Calhoun (1999), a full PWIM cycle may take three days to two months, depending on students' needs and development; the average PWIM cycle lasts approximately one to two weeks. In this study, the intervention completed two cycles of the PWIM.

In addition to the illustrated dictionary, participants received their own copies of the listed words on flashcards. After receiving flashcards, participants independently reviewed the flashcards, reading each word and referring to the picture-word dictionary if necessary. If students struggled to read a word, they took that flashcard to the picture, found the matching word which was written on the chart paper outside the picture, traced the line to the picture, recalled the item, and read the word. Students who finished reviewing words were asked to repeat the process until the teacher had observed that most participants had completed at least one review of the flashcards. Another activity during instruction was for these children to work in partners to categorize the words in any way as long as they could explain their reasons for categorizing; pairs who finished categorizing then shared their categories with the teacher while

other groups were still working. The teacher challenged those who completed one round of categorizing to categorize their words in a different way. Some of the students' categories included: "all of these words are about people," "these words all start with the same letter," "these words are short, these are medium, and these are long," "compound words," and "these words all name things that are outside." Further, during the first cycle of the PWIM, the teacher guided discussion as students produced factual sentences describing the picture; the next day participants received a typed copy of the sentences to read individually. (See Appendix C for the sequence of review of the PWIM intervention in this research study.)

CHAPTER FOUR

RESULTS

The research questions focused on vocabulary acquisition for ESL students and native-English speakers. Specifically, (1) how does PWIM instruction impact vocabulary acquisition compared to typical classroom instruction? Further, (2) are performances on vocabulary measures related to performances on comprehension measures? (3) Is this relation evident after controlling for language proficiency? (4) Does the pattern of relations vary as a function of group membership—experimental vs. control? Additionally, (5) does the use of PWIM impact vocabulary and/or comprehension scores? Finally, (6) are there differential effects of the intervention on vocabulary and comprehension skills based on language status?

Preliminary Analyses

Descriptive statistics of performance on the measures for the entire sample are provided in Table 1. There appears to be substantial range in performance on the vocabulary measures at pre- and post test as well as substantial variance in scores on the comprehension measure at pretest. Vocabulary data are raw scores (number of words correctly identified, with a total of 37 possible). Comprehension data are Lexile scores, comprised from the SRI assessment. The possible range of scores stretches from 100 to 1500 for students in kindergarten through 12th grade; typical second graders earn a score of approximately 400 on the SRI test. Because one of the research questions focuses on potential group differences based on language proficiency, Tables 2 and 3 illustrate descriptive data by group membership.

Table 1

Descriptive Statistics: Total Sample

Variable	Minimum	Maximum	Mean	Std. Deviation (SD)
Vocabulary pre	5.00	37.00	25.43	9.12
Vocabulary post	9.00	37.00	26.52	7.52
Comp. pre	153.00	625.00	308.60	122.48
Comp. post	182.00	769.00	478.73	167.21

Note. N=35

Table 2

Descriptive Statistics: Experimental Group by Language Proficiency

	ESOL (n=9)		Non ESOL (n=5)		All (n=14)	
Variable	Mean	SD	Mean	SD	Mean	SD
Vocab pre	24.44	10.76	27.40	7.70	25.50	9.57
Vocab post	24.57	9.74	32.00	4.36	27.67	8.56
Comp pre	319.20	110.68	408.00	189.65	352.50	139.24
Comp post	450.33	153.95	505.50	237.88	472.40	181.22

Table 3

Descriptive Statistics: Control Group by Language Proficiency

	ESOL (n=16)		Non ESOL (n=5)		All (n=21)	
Variable	Mean	SD	Mean	SD	Mean	SD
Vocab pre	25.56	7.49	24.90	7.40	25.38	7.24
Vocab post	25.94	7.53	25.60	5.55	25.86	6.98
Comp pre	279.89	121.58	277.67	51.63	279.33	105.99
Comp post	480.50	155.31	489.25	213.89	482.69	163.87

To determine if the data were normally distributed, which would dictate use of

parametric or nonparametric statistics, the data were examined for violations of normality. Using

the Shapiro-Wilk test of normality, it was determined that most variables did not violate

assumptions of normality (*p*s ranging from .38 to .93), with the exception of the comprehension pretest (*p*=.03). Given that most of the variables did not violate assumptions of normality, parametric statistics were employed.

Primary Quantitative Analyses

To address the first research question (i.e., how does PWIM instruction impact vocabulary acquisition compared to typical classroom instruction?), pre- and post test scores were compared to determine the amount of change following intervention for the entire sample. A one way analysis of variance (ANOVA) was conducted. This statistical test examines differences in mean scores based on group membership (i.e., in this case, experimental group compared to control group). Results indicated that students' scores did not differ significantly based on group membership for vocabulary, F (1, 31) = .435, *p*=.514.

To address the second, third, and fourth research questions (i.e., Are performances on vocabulary measures related to performance on comprehension measures? Is this relation evident after controlling for language proficiency? Does the pattern of relations vary as a function of group membership—experimental vs. control?), bivariate correlations were computed among vocabulary pre- and post test scores and comprehension pre- and post test scores for the entire sample (Table 4). Then, to partial out variance accounted for by language proficiency, partial correlations were computed, controlling for ESOL status (Table 5). Results indicated that while several scores were related statistically, a few of these relations disappeared once language proficiency was controlled.

Table 4

Bivariate Correlations Among Scores: Entire Sample

Variable	1	2	3
1. Vocab pre	--		
2. Vocab post	.92***	--	
3. Comp. pre	.56**	.71***	--
4. Comp post	.60***	.72***	.45*

Note. *=$p<.05$, **=$p<.01$, ***=$p<.001$

Table 5

Partial Correlations Among Scores, Controlling for ESOL: Entire Sample

Variable	1	2	3
1. Vocab pre	--		
2. Vocab post	.64**	--	
3. Comp. pre	.64**	.72***	--
4. Comp post	.42	.56*	.43

Note. *=$p<.05$, **=$p<.01$, ***=$p<.001$

To determine if the pattern of relations varied as a function of group membership (i.e., experimental vs. control group), partial correlations for each data set were computed separately (see Table 6). Next, examination for any differences in the strength of correlations for each group was conducted through the Independent Correlation z test. This tests the hypothesis that two correlation coefficients obtained from independent samples are equal. The correlation coefficients were converted into z-scores using Fishers r-to-z transformation (Cohen & Cohen, 1983). Of the six pairs of correlation coefficients subjected to this test, a total of zero were deemed as significantly different (see Table 7), indicating that there were no reliable differences between the scores of the children in the experimental group and those in the control group.

Table 6

Partial Correlations Among Scores, Controlling for ESOL, By Group Membership

	Experimental (n=14)		
Variable	1	2	3
1. Vocab pre	--		
2. Vocab post	.84	--	
3. Comp. pre	.77	.65	--
4. Comp. post	.74	.86	.45
	Control (n=21)		
1. Vocab pre	--		
2. Vocab post	.65*	--	
3. Comp. pre	.53	.72*	--
4. Comp. post	.22	.58	.45

Note. *=$p<.05$, **=$p<.01$

Table 7

Independent Correlation z Test

Coefficient Pair	z score
.84/.65	-1.17
.77/.53	-1.12
.74/.22	-1.90
.65/.72	.35
.86/.58	-1.65
.45/.45	0.00

To address the fifth research question (i.e., does the use of PWIM impact vocabulary and/or comprehension scores?), only data from the experimental group were examined. Gain scores (post test minus pretest) were calculated to illustrate growth in vocabulary and

comprehension knowledge following intervention. These gain scores were then statistically examined using an independent sample t test. Results indicated that statistically significant differences in vocabulary scores were noted, t (11) = 11.19, p=.000, with post test scores being statistically higher (M=27.67) than pretest scores (M=25.50) for the students in the experimental group. Results also indicated that statistically significant differences in comprehension scores were noted, t (9) = 8.24, p=.000, with post test scores being statistically higher (M=472.40) than pretest scores (M=352.50) for the students in the experimental group.

Finally, to address the final research question (i.e., are there differential effects of the intervention on vocabulary and comprehension skills based on language status?), data were examined in two different ways. First, data were aggregated (i.e., control and experimental) and groups were established based on language proficiency (i.e., ESOL compared to nonESOL). To examine potential differences in growth in vocabulary and comprehension scores based on language proficiency, gain scores were used and a one way analysis of variance (ANOVA) was computed. Results indicated that students' vocabulary gain scores did not differ significantly based on language proficiency, F (1, 31) = 1.82, p=.187. In addition, students' comprehension gain scores did not differ significantly based on language proficiency, F (1, 18) = .209, p=.653.

To determine if language proficiency had an impact on the usefulness or effectiveness of PWIM, the data were re-examined using only data from the experimental group. Vocabulary and comprehension gain scores were used and a one way analysis of variance (ANOVA) was computed. Results indicated that growth in vocabulary did not differ significantly based on language proficiency, F (1, 10) = 1.01, p=.34. Additionally, growth in comprehension did not differ significantly based on language proficiency, F (1, 6) = .027, p=.88.

Primary Qualitative Data

Although formal qualitative analyses did not take place, additional qualitative data often supplement or enhance the quantitative findings. Interesting anecdotal recordings are reported.

Logistics. This research study consisted of four weeks including pre-assessment and post-assessment, plus two more days of pretesting the experimental group participants. In total, the PWIM intervention spanned 13 days of intervention. On Thursday, November 30, which would have been the second day of the first cycle of the intervention, school was cancelled due to snow. Another logistical fact is that the activity of generating factual sentences for the first picture occurred during Tier III, the reading block in which struggling readers are pulled out for highly structured reading intervention, so the lowest readers did not participate in this activity. A third logistical aspect that may have affected the PWIM intervention is that I am the teacher and the investigator of this study. Since the experimental group participants were members of my own class, they might have put more effort into activities throughout the PWIM process than if they had not been students from my class because they know my expectations and because we have a special bond as teacher/students.

Assessment. One issue regarding assessments is the influence of read-aloud books. Before post-testing experimental group participants, I read aloud the book entitled *The Pledge of Allegiance*, which directly related to the second PWIM picture. This may have affected some students' recall of words regarding that picture. Another issue related to assessments is that of student absences. Two experimental group participants were absent on the days of post-assessment, which was immediately prior to winter break; I did not post test after the break. A third assessment issue is related to language status. During the pre-assessment and post-assessment, several students read the singular form of a vocabulary word. If they had added the

plural ending, the word could have been counted as correct. Many of these particular students are of Asian American origin or speak English as a second language. It could be possible that students' language status may have impacted their reading of the vocabulary words.

Intervention. With the PWIM intervention, students had access to the picture-word dictionary as a vocabulary resource. Additionally, experimental group participants received their own copies of the listed words. It took time for students to cut apart the words to make individual word cards. A few students cut out the words quite particularly and meticulously. Reminding them of the purpose of the individual word cards, I encouraged them to cut nicely but to take less time in cutting. My reminder beneficially impacted most students' choices of cutting techniques.

One activity during the PWIM intervention was for experimental group participants to independently review the flashcards, reading each word and referring to the picture-word dictionary if necessary. I demonstrated and also had students model what to do if they struggled to read a word. They were supposed to take that flashcard to the picture, find the matching word which was written on the chart paper outside the picture, trace the line to the picture, recall the item, and read the word. At first not many students were bringing an unfamiliar word to the picture. Knowing my students, I asked one of my struggling readers if he knew a certain word (I pointed to it). He shook his head. I asked him to bring the word card to the picture, and I demonstrated again how to look for the word around the picture. When he found the word, I helped him trace the line from the word to the item in the picture. Then I asked him what the word was, and he shyly guessed the word. I celebrated his accomplishment exuberantly, cheering and offering my hand for a high five. From that point on, with some encouragement, other students brought word cards to the picture, and I congratulated each student on their wise

decision to solve their word problems. Even students that I know could say words brought word cards to the picture.

If I could complete the intervention again, I would change a few routines. First, we would spend more time on the second picture if we had the opportunity. Next, categorizing words would consistently occur in partners, because the children discuss and therefore more likely process their reasons for putting certain words together. Maybe one time participants would categorize their words individually. The third routine I might change involves having students cut out the word cards, since cutting out the words took quite a while for many students. Instead, I might cut apart the words with a paper cutter before giving them to the children. A few children were cutting so meticulously that it seemed as though they wanted their words to be perfectly cut. Alternatively, some children accidentally cut off part of the word and then needed tape to fix the word. However, it seemed as though at least some students were reading the words while they were cutting them; if this were the case, cutting may have been an appropriate activity.

Another routine I would add is more differentiated instruction. Some students need to focus on simply recognizing the vocabulary words, while others do not need as much repetition. I could guide some students to discover spelling patterns and phonic elements of words. Further, I would inspire the more advanced readers by encouraging them to generate more difficult vocabulary words and by examining deeper levels of the vocabulary words. After modeling how to brainstorm titles and sentences for the PWIM picture and how to put the sentences together into a logical, detailed paragraph, I could also challenge the higher students to cooperatively or even independently write their own paragraphs about the picture.

Language Status. According to the results of this research study, the PWIM intervention positively affects students' vocabulary acquisition; however, there were no differential effects of the intervention on vocabulary and comprehension skills based on language status. Regarding the lack of difference between ESL and nonESL children, it would be important to note that many of our ESL students speak, understand, and read English wonderfully. In fact, several are in our highest reading groups in second grade, even reading at a more advanced level than some students whose primary language is English. This issue prompts my inquiry of how students' primary languages might impact their vocabulary acquisition and comprehension. Among our ESL children, the majority speak Spanish or Laotian at home. Further research could explore this tangent of language status and vocabulary acquisition.

CHAPTER FIVE

DISCUSSION

Given the importance of vocabulary knowledge to reading success and the potential risk ESL students face when learning to read, my research questions focus on vocabulary acquisition for ESL students and native-English speakers. Specifically, (1) how does PWIM instruction impact vocabulary acquisition compared to typical classroom instruction? Further, (2) are performances on vocabulary measures related to performances on comprehension measures? (3) Is this relation evident after controlling for language proficiency? (4) Does the pattern of relations vary as a function of group membership—experimental vs. control? Additionally, (5) does the use of PWIM impact vocabulary and/or comprehension scores? Finally, (6) are there differential effects of the intervention on vocabulary and comprehension skills based on language status?

One hypothesis that I had is that the PWIM would positively affect students' vocabulary acquisition. Further, I predicted that there would be differential effects of the intervention on vocabulary and comprehension skills based on language status. Results of this research study have confirmed that the PWIM intervention positively affects students' vocabulary acquisition. However, there were no differential effects of the intervention on vocabulary and comprehension skills based on language status.

Impact on Vocabulary

The first research question was: how does PWIM instruction impact vocabulary acquisition compared to typical classroom instruction? At our school, everyone recites the Pledge of Allegiance daily. Otherwise, these vocabulary words are not discussed during typical classroom instruction, so I had expected participants in the experimental group to outperform

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students in the control group on the vocabulary post test. However, according to the results, students' scores did not statistically differ significantly based on group membership (experimental vs. control) for vocabulary. In this case, the PWIM intervention did not impact vocabulary acquisition differently as compared to typical classroom instruction.

These results differ from that of previous research, such as that conducted by Calhoun et al. (2001) in Canada. One possible reason that these results differ from previous research is the difference in the length of time of implementation and number of cycles of inquiry. Although the span of time of my research covered four weeks, there were only 13 days of actual implementation. Additionally, we incorporated two cycles of inquiry, with each cycle lasting about a week. In contrast, Calhoun et al. (2001) utilized the PWIM in multiple cycles of inquiry, with each cycle lasting approximately two to six weeks. Moreover, the PWIM implementation of Calhoun et al. (2001) occurred over an entire school year.

Another possible reason for the difference in results is the thoroughness of implementation. In my classroom, the PWIM was not a large part of the reading instruction, whereas Calhoun et al. (2001) used the PWIM to teach beginning reading and writing as a major component of the language arts curriculum and even to teach concepts in social studies and science. Further, while I generally followed the basic lesson structure of the PWIM as described by Calhoun (1999) and Joyce and Weil (2004) (see Appendix B), we only generated sentences about one picture, and we did not classify the sentences or generate paragraphs, as did Calhoun et al. (2001) in their research. In addition, my students had opportunities to classify their words, but I did not give explicit instruction on some of those categories, as Calhoun et al. (2001) included in their research.

Relation between Vocabulary and Comprehension

The second research question was: are performances on vocabulary measures related to performances on comprehension measures? This question focused on the entire sample. As expected, results indicated affirmatively that vocabulary is related to comprehension.

These results support that of previous research. Reading comprehension combines vocabulary, or word knowledge, with making sense of the vocabulary to create meaning (Davis, 1944; IRA, 2002). Furthermore, students with a limited vocabulary struggle increasingly to understand what they read as their trouble with the vocabulary impedes their comprehension of the text (Chall, Jacobs, & Baldwin, 1990). However, students' reading comprehension improves with the presence of vocabulary instruction (Pressley, 2001).

Impact of Language Proficiency

The third research question was: is this relation evident after controlling for language proficiency? This question examined the strength of the relationship between vocabulary and comprehension after controlling for ESL status. Results indicated that the relationship between vocabulary and comprehension still exists but is weaker after controlling for language proficiency.

These results differ from that of some research performed previously. For example, Biemiller (2003) discovered that many ESL students in fifth or sixth grade are an average of two grade levels behind in vocabulary acquisition. If, however, ESL students possess a large vocabulary in their primary language, they are able to acquire vocabulary in English more quickly (Biemiller, 2003). Another issue is that students who speak English as a second language can often speak and understand social language, which includes gestures, body language, and

facial expressions, more easily than academic language, which often lacks nonverbal clues (Drucker, 2003; Watts-Taffe & Truscott, 2000).

Vocabulary and Comprehension based on Group Membership

The fourth research question was: does the pattern of relations vary as a function of group membership—experimental vs. control? Results indicated that there were no reliable differences in vocabulary and comprehension between the scores of the children in the experimental group and those in the control group. There was a stronger relationship between vocabulary and comprehension for the experimental group than the control group, but neither of those findings was statistically significant. Calhoun et al. (2001) did not appear to utilize a control group in their research of the PWIM as an intervention.

Effects of PWIM on Vocabulary and Comprehension: Experimental Group

The fifth research question was: does the use of PWIM impact vocabulary and/or comprehension scores? Results indicated that within the experimental group, post test scores on both the vocabulary and comprehension assessments were significantly higher than pretest scores. Since these vocabulary words were not addressed in the reading series, the growth in vocabulary scores can be largely attributed to the PWIM intervention. The gains in comprehension could be partially linked to the utilization of the PWIM, although other factors, including maturation, more time reading, and alternative reading instruction, could also have made a difference. Therefore, it could be stated that the PWIM intervention probably influenced vocabulary and comprehension scores for students in the experimental group.

One of my original hypotheses was that the PWIM would enhance students' vocabulary acquisition. These results advocate my hypothesis because experimental group students' vocabulary scores increased during the PWIM intervention.

Additionally, these results support that of previous research. When Calhoun et al. (2001) implemented the PWIM as a major component of a language arts curriculum for beginning readers, they discovered that students achieved significant gains in vocabulary and comprehension. Specifically, in one teacher researcher's special education classroom of students in grades four/five, students made substantial gains in vocabulary and comprehension with the PWIM; these student gains were "twice the gain of average students for a year, and eight times their own previous annual gain" (Calhoun et al., 2001, p. 11). In fact, if these students would make similar gains the following year, then they would be considered "average" students according to test scores (Calhoun et al., 2001).

Differential Effects of PWIM based on Language Proficiency

The sixth research question was: are there differential effects of the intervention on vocabulary and comprehension skills based on language status? For the entire sample, results indicated that neither vocabulary nor comprehension gain scores differed significantly based on language proficiency. Further, within the experimental group, language proficiency did not make a difference on students' vocabulary or comprehension scores. Essentially, according to this research, the PWIM intervention did not have a more beneficial effect for ESL students as compared to nonESL students.

These results do not support my original hypothesis that ESL students would benefit more from the PWIM intervention than nonESL students. I had thought that this type of instruction with its picture-word dictionary would particularly help ELL students with vocabulary acquisition. However, other factors could influence the results of this research question. The small sample size may have affected the data in this case. It is possible that if more participants had been involved, the results might have shown that the PWIM intervention

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benefits ESOL students more than native-English speakers. Another factor, as noted in the primary qualitative data section of the results chapter, is that many of the ESL students already speak, understand, and read English proficiently. In fact, several are in the highest reading groups of second grade, even reading at a more advanced level than some students whose primary language is English. Only one student in the experimental group and three students in the control group have moved to our school during this year from other countries (Puerto Rico and Mexico) and have just been learning English this year. All other ESL students in the experimental and control groups have been speaking English at least from the time they began kindergarten, if not before. Although many ESL students speak another language at home, some of our ESL students speak a combination of English and their primary language at home.

Another issue that may have influenced the results of this research question is the quality of instructional strategies already in place at our school. Teachers consistently use scaffolding, which is providing contextual, social, and temporary frameworks to capitalize on students' strengths; scaffolding helps ELL students become more proficient in English during integrated instruction (Watts-Taffe & Truscott, 2000). Three methods of using scaffolding to enhance literacy are activating students' background knowledge, incorporating interactive communication, and promoting vocabulary development (Watts-Taffe & Truscott, 2000). Two aspects of activating students' background knowledge are using graphic organizers and highly structured cooperative learning in the classroom, both of which are components of our reading program. Our entire school uses a reading program known as Success For All (SFA), an intensive, structured curriculum which regroups students quarterly into small homogeneous classes based on reading level, and is designed for schools with large disadvantaged populations (Tierney & Readence, 2005). SFA includes interaction with meaningful text, phonics taught

systematically, an emphasis on meaning and comprehension, and a focus on reading strategies (Tierney & Readence, 2005). In addition, educators at our elementary school are familiar with teaching ESOL students, since over 50% of our population is in this category; many teachers are certified in ESL instruction, and we are fortunate to receive professional development about strategies for teaching ELL children.

Limitations

One limitation of this research study was the small sample size. With such a small sample, it could have been difficult to achieve statistically significant results. On the other hand, "increasing sample size is of benefit in research because it increases precision" (Patten, 2005, p. 53). Having highly precise results, or very statistically significant results, means that "the results will vary by only a small amount from sample to sample" (Patten, 2005, p. 53). In addition to increasing precision, if this sample size had been larger, the results of this research may have been different. For instance, more participants may have affected the results of the relationship of vocabulary and comprehension based on group membership (experimental vs. control). If the sample size had been larger, the results may have shown that the PWIM intervention is actually more beneficial for ESL students than for nonESL students.

Another limitation of this research study was the quasi-experimental design. A true experimental design, with random assignment to experimental and control groups, is the most accurate design to explore cause-and-effect relationships because random assignment has no bias (Patten, 2005). However, it was not possible for this research to assign participants at random because the experimental group consisted of students in my own classroom while the control group consisted of students from the other second grade classrooms. Quasi-experimental designs are considered to be preferable to pre-experimental designs, which have poor internal validity

(the issue of whether the treatment is responsible for the changes observed in the experimental setting) (Patten, 2005).

Future Research

Future research might incorporate a study of the same research questions but on a larger scale. For example, it might be beneficial if all of the second grade teachers at my school provided instruction with the PWIM, while the control group would be all second graders at a comparable school. As mentioned previously, a larger sample size would increase precision and might even influence or vary the results. Future research could also focus on the retention of vocabulary words in long-term memory (Calhoun et al., 2001) in addition to vocabulary acquisition. Another issue that could be developed in future research is how students' primary languages might impact their vocabulary acquisition and comprehension. An additional aspect of future research could be the integration of the PWIM with other subjects; various PWIM pictures could incorporate specific concepts in mathematics, social studies, or science. For example, if the current science topic were animal adaptations and habitats, the PWIM picture could show a snowshoe hare blending into its habitat, and the discussion could emphasize some of the scientific concepts as well as the vocabulary words.

Conclusions

In conclusion, results from this study indicate that the PWIM appears to be an effective instructional tool for classroom teachers to use in facilitating vocabulary acquisition. The fact that no differences were found between ESL and nonESL students' performance on the vocabulary post-test measure within the experimental group could be attributed to the ESL students' high levels of English proficiency upon the study's initiation. The use of scaffolding

and explicit connections to concepts and words appears to be beneficial to all students, regardless

of language status.

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APPENDICES

VOCABULARY: PICTURE WORD INDUCTIVE MODEL:
PLEDGE OF ALLEGIANCE POSTER

Word	Response	Word	Response	Word	Response	Word	Response
children		statue		heart		ocean	
hand		pledge		clouds		republic	
rock		skyscrapers		windows		smile	
school		farm		liberty		allegiance	
tree		blue		braces		stripes	
stars		wheat		water		white	
red		flag		justice		barn	
buildings		torch		indivisible			
lighthouse		bridge		shoulders			
Capitol		sky		people			

Note: These vocabulary words were used on the pretest and post test. The researcher chose these

vocabulary words for the assessment based on the possible vocabulary words that students might

generate while looking at the PWIM picture.

APPENDIX B

SUGGESTED LESSON STRUCTURE OF THE PICTURE WORD INDUCTIVE MODEL
(Joyce & Weil, 2004)

Students study the picture and shake out words. Students identify things they see in the picture.

Teacher draws a line from the item in the picture to a place outside the picture.

Teacher says the word, spells the word and points to each letter with her finger or the marker,

      and says the word again.

Students spell the word with the teacher and repeat the word.

Read/review the Picture Word chart (say, spell, say).

Provide students with their individual sets of word cards.

Students check whether they can recognize words immediately or decode them as necessary,

      using the Picture Word dictionary if they have difficulty.

"If you have trouble reading a word, what do you do?" [Trace the line to the picture.]

Students classify the words in terms of phonetic, structural, or content properties.

Students share their categories and why they put a particular set of words together.

Identify common concepts in the words to emphasize with the whole class. Have a set of large

      vocabulary cards to use for whole-class activities.

Read/review the Picture Word chart (say, spell, say).

Add words, if desired, to the Picture Word chart and to the word banks.

Students classify the words in different categories than previously.

Have students think of a title for their Picture Word chart. (The teacher leads students to think

      about the "evidence" and information in their chart and about what they want to say

      about this information.)

Have students generate factual sentences directly related to their Picture Word chart.

Students classify sentences and give reasons for their categorization.

Teacher models putting the sentences together into a good paragraph.

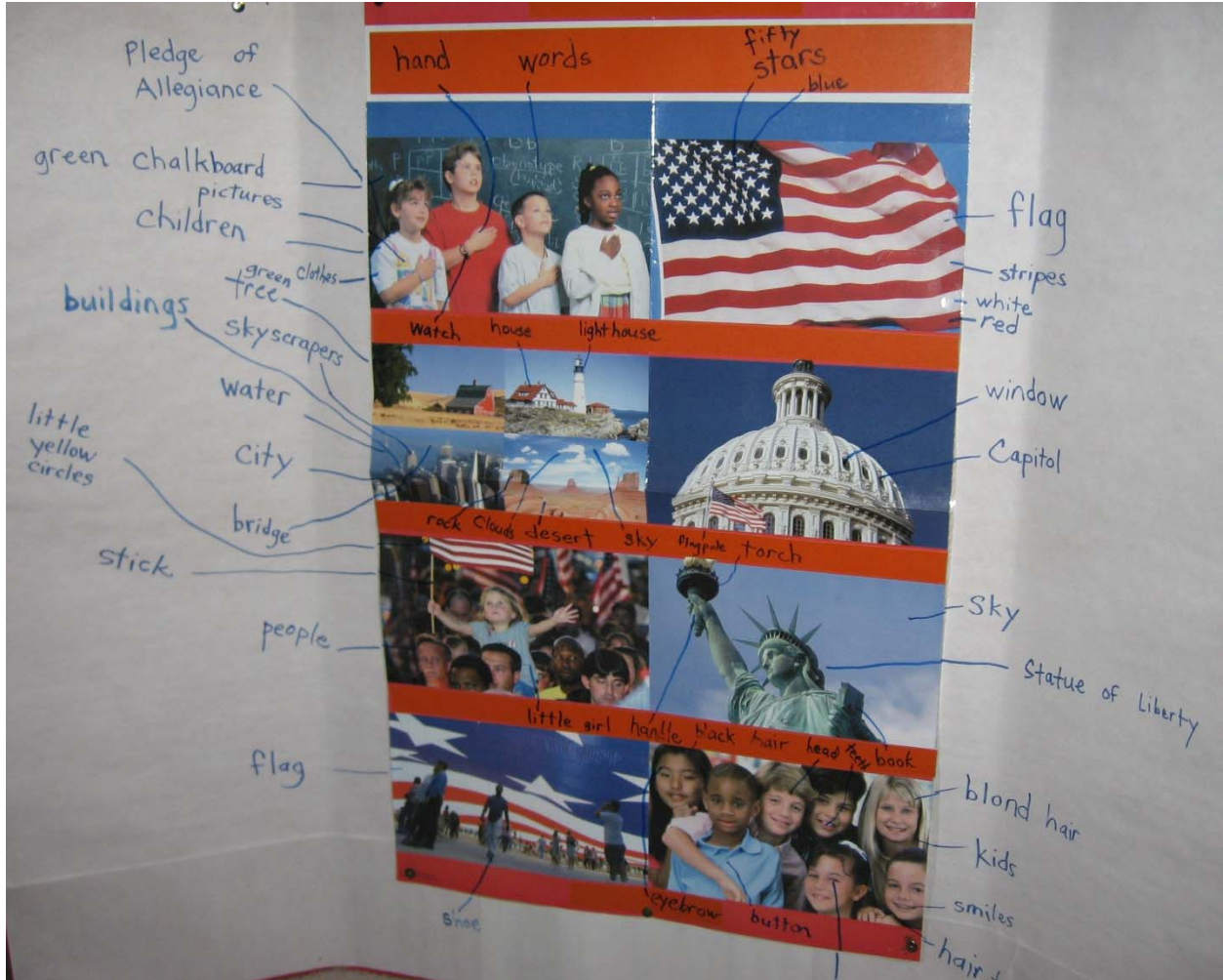Read/review the sentences or paragraphs.

APPENDIX C

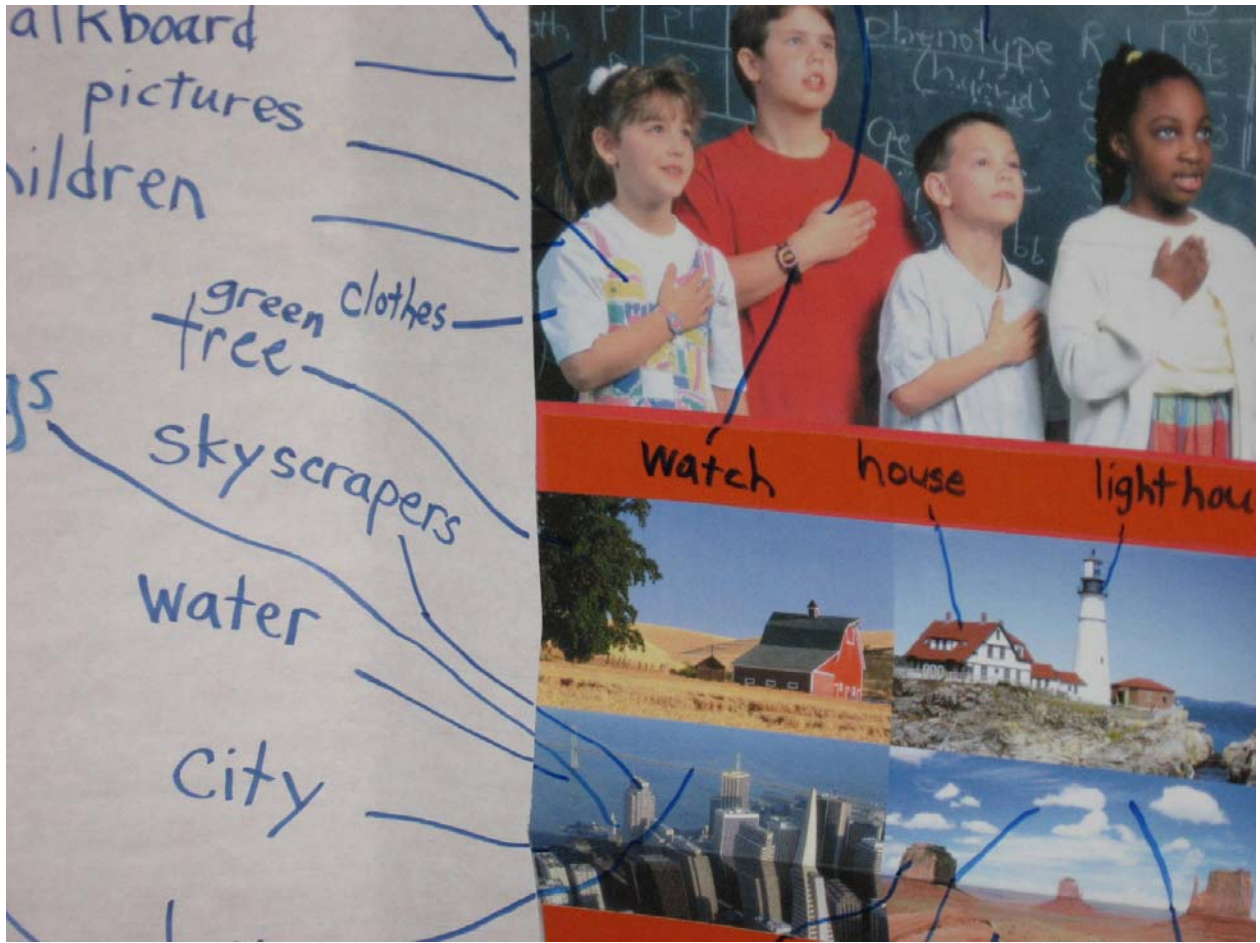## SEQUENCE OF REVIEW OF THE PWIM INTERVENTION

Cycle 1	Day 1 (Nov. 29)	Shake words out of the first picture (dogs).
	Day 2 (Dec. 1)	Shake more words out of the picture and review previously generated words.
	Day 3 (Dec. 5)	Review the first picture as a class. Participants cut apart and read individual word cards, referring to the picture as necessary.
	Day 4 (Dec. 6)	Briefly review the first picture as a class. Participants read individual word cards, referring to the picture as necessary. Participants independently categorize words.
	Day 5 (Dec. 7)	Participants read individual word cards, referring to the picture as necessary. Participants independently categorize words.
	Day 6 (Dec. 8)	Participants read word cards individually, referring to the picture as necessary. In partners, participants categorize words.
	Day 7 (Dec. 11)	As a class, participants generate factual sentences about the picture.
Cycle 2	Day 8 (Dec. 12)	Participants individually read their own copy of the generated sentences about the picture. As a class, shake out words for the second picture (pledge).
	Day 9 (Dec. 13)	Shake more words out of the second picture and review previously generated words.
	Day 10 (Dec. 14)	Participants cut apart and read individual word cards, referring to the picture as necessary.
	Day 11 (Dec. 15)	Participants read word cards individually, referring to the picture as needed. In partners, participants categorize words.
	Day 12 (Dec. 19)	Participants read word cards individually, referring to the picture as needed. In partners, participants categorize words.
	Day 13 (Dec. 20)	Read aloud *The Pledge of Allegiance* book. Begin post-testing my students (experimental group) while others categorize words in partners or generate sentences using their word cards.

PWIM PICTURE WITH VOCABULARY WORDS