

Student Work

---

11-1-2012

## The Effects of Marzano's Six Step Vocabulary Process, on Fourth Grade Students' Vocabulary Knowledge, Fluency, and Sentence Complexity

Janet S. Suing  
*University of Nebraska at Omaha*

Follow this and additional works at: <https://digitalcommons.unomaha.edu/studentwork>

 Part of the [Education Commons](#)

Please take our feedback survey at: [https://unomaha.az1.qualtrics.com/jfe/form/SV\\_8cchtFmpDyGfBLE](https://unomaha.az1.qualtrics.com/jfe/form/SV_8cchtFmpDyGfBLE)

---

### Recommended Citation

Suing, Janet S., "The Effects of Marzano's Six Step Vocabulary Process, on Fourth Grade Students' Vocabulary Knowledge, Fluency, and Sentence Complexity" (2012). *Student Work*. 3476.  
<https://digitalcommons.unomaha.edu/studentwork/3476>

This Dissertation is brought to you for free and open access by DigitalCommons@UNO. It has been accepted for inclusion in Student Work by an authorized administrator of DigitalCommons@UNO. For more information, please contact [unodigitalcommons@unomaha.edu](mailto:unodigitalcommons@unomaha.edu).

The Effects of Marzano's Six Step Vocabulary Process, on Fourth Grade Students'  
Vocabulary Knowledge, Fluency, and Sentence Complexity

By

Janet S. Suing

A DISSERTATION

Presented to the Faculty of

The Graduate College of the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Education

Major: Educational Administration

Under the Supervision of Dr. Kay A. Keiser

Omaha, Nebraska

November, 2012

Supervisory Committee:

Kay A. Keiser, Ed.D., Chair

Peter J. Smith, Ed.D.

Jeanne L. Surface, Ed.D.

Julie Delkamiller, Ed.D.

UMI Number: 3546863

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI 3546863

Published by ProQuest LLC (2012). Copyright in the Dissertation held by the Author.

Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against unauthorized copying under Title 17, United States Code



ProQuest LLC.  
789 East Eisenhower Parkway  
P.O. Box 1346  
Ann Arbor, MI 48106 - 1346

## **Abstract**

The Effects of Marzano's Six Step Vocabulary Process, on Fourth Grade Students'

Vocabulary Knowledge, Fluency, and Sentence Complexity

Janet S. Suing, Ed.D.

University of Nebraska, 2012

Advisor: Kay A. Keiser, Ed.D.

This exploratory study examined the ways in which fourth grade students, in an urban setting, responded to a nine-week implementation of Marzano's Six Step Vocabulary Process. The purpose of this study was to explore the relationship between the direct instruction of vocabulary and the effects on student achievement as measured by Vocabulary Words Assessments, Rigby Reading A-Z Fluency Assessments, and Sentence Complexity Assessments.

The researcher explored the impact of the vocabulary intervention on two groups of students, fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards). Predictions were based on Acuity testing. The core question that guided this research was the following: Is there a statistically significant difference in vocabulary, fluency and sentence complexity scores between Group 1 and Group 2?

Data were collected from 21 fourth grade students and analysis revealed that there was a statistically significant gain in vocabulary knowledge for both groups. Effect sizes in this nine-week study correlate to a 32-33 percentile gain in student achievement, suggesting counters to Fourth Grade Slump and Summer Learning Loss.

## Acknowledgements

“What a great day to be alive!” I’ve always delighted in my mother’s words and remember laughing as she would run and click her heels in excitement. The late Josephine Mary Tomasek, a mother who loved life and found great pleasure in simply exploring the vocabulary of crossword puzzles, has inspired me in many ways. Her dedication, resilience, and laughter, in the face of many life challenges, were in my thoughts as I struggled through this dissertation, a personal goal of many years. I feel she would have delighted in the topic, vocabulary.

My three children, Shawn, Angela, and Ronny J., lovingly live their lives with maturity and independence that makes me forever proud! You are my greatest joy! I am blessed beyond belief! Stopping to think of the memories we’ve created together was a heart-warming break, helping me refocus when deadlines were approaching.

The knowledge, insights, and perspectives I have gained, as a result of many, many hours of coursework at UNO through the years, are immeasurable. Collaborating with so many inquisitive, creative, reflective, and scholarly professors and doctoral candidates has enriched my life. I am most deeply appreciative to Dr. Kay Keiser, my dissertation chair, for not only recognizing the importance of this study, but for supporting my efforts throughout. Dr. Peter Smith has shared more than just his statistical expertise. He has creatively inspired personal thought and reflection, rather than simply delivering information through the years. I am grateful for his work on my supervisory committee, as well as for the work of Dr. Jeanne L. Surface and Dr. Julie Delkamiller. Your time and contributions are sincerely appreciated.

Merci, dear husband, Mark, for always “being there” for me. What patience! Oh, Henry! Grammy loves, loves, loves you! Pura vida! Dare to be different! Dux Esto!

**Table of Contents**

Abstract	ii
Acknowledgements	iii
Table of Contents	iv
List of Tables	vi
Chapter 1 Introduction	
Background	1
Theoretical Framework and Purpose	2
Problem Statement	3
Research Questions	5
Definition of Terms	5
Assumptions and Strengths	8
Delimitations of the Study	9
Limitations of the Study	9
Significance of the Study	10
Organization of the Study	11
Chapter 2 Review of the Literature	12
Fourth Grade Slump	14
Instructional Time Challenge	15
Summer Learning Loss	18
Vocabulary and Comprehension	22
Direct Instruction of Vocabulary	27
Conclusion	37

Chapter 3 Methodology	38
Brief Overview	38
Design	38
Research Questions	39
Subjects	39
Data Collection	40
Instruments	43
Data Analysis	46
Chapter 4 Results	48
Research Question #1	48
Research Question #2	49
Research Question #3	50
Tables	51
Chapter 5 Discussion	54
Discussion of Results	55
Vocabulary Knowledge	55
Rigby Reading A-Z Fluency	56
Sentence Complexity	57
Importance of Study	58
Recommendations for Further Research	61
Summary	62
References	64

**List of Tables**

Table 1	Descriptive Statistics for Vocabulary Assessment Score
Table 2	ANOVA for Vocabulary Words Assessment Scores
Table 3	Descriptive Statistics for Rigby Reading A-Z Fluency Assessment Scores
Table 4	ANOVA for Rigby Reading A-Z Fluency Assessment Scores
Table 5	Descriptive Statistics for Sentence Complexity Scores
Table 6	ANOVA for Sentence Complexity Scores



## **Chapter 1**

### **Introduction**

Three quarters of the fourth grade school year have flown by and fourth quarter is about to begin. State testing is over and the results will not be revealed until well after the last dismissal bell has rung the school year to an end. Effective fourth grade teachers are confident that a number of their students achieved at optimal levels and met all state reading standards. They feel confident the instructional strategies they have implemented thus far propelled those students to a readiness level that would result in reading success.

Unfortunately, these same teachers are also aware of other students who may have struggled to meet even the minimal of state reading standards. Despite teachers' tireless efforts to identify and implement what they know as the most effective reading strategies throughout first, second, and third quarter, some students do not demonstrate the level of readiness necessary to meet all state reading standards, prior to the test date. Teachers are disheartened. These dedicated teachers are concerned about the progress of their students and continue to struggle with determining how to best meet their specific needs. They wonder what strategies will be the most effective with just one quarter of the school year left.

Some may consider this an emergency situation. Three components compound the seriousness of the situation for fourth graders: (1) the research reality of the Fourth Grade Slump where vocabulary becomes more challenging (Chall, 1983), especially among economically disadvantaged children (Chall, Jacobs, & Baldwin, 1990), (2) a shift away from direct instruction with a focus on indirect methods, for example incidental acquisition of vocabulary based on context clues (Tadlock & Stone, 2005), and (3)

Summer Learning Loss where students can experience an instructional loss of at least one month and more (Cooper et al, 1996).

Given a mere nine weeks of fourth grade to address this emergency situation, the researcher, along with dedicated fourth grade teachers and administrators, were concerned. In response, Jeanne Chall's identification of the need for direct instruction in word meanings, especially effective for readers who are struggling at grade four (Chall, 1983), were explored by implementing Marzano's well-researched success with his Six Step Vocabulary Process for direct instruction (Marzano, 2007). Encouraging an optimistic, emergency approach with limited time, are Harriet Beecher Stowe's (2012) words, "Never give up, for that is just the place and time that the tide will turn."

### **Theoretical Framework and Purpose**

Jeanne Chall (1983, 1996) identifies the need for direct instruction in word meanings as especially effective for readers who are struggling at grade four and above. In addition, Marzano's (2009) research indicates significant progress when his Six Step Vocabulary Process for direct instruction is implemented. Therefore, a focus on daily, direct instruction of vocabulary and how it will help counter Fourth Grade Slump is the foundation of this study.

The purpose of this study was to explore the relationship between the direct instruction of vocabulary in the fourth quarter of fourth grade, using Marzano's (2009) Six Step Vocabulary Process, and the effects on student achievement as measured by Vocabulary Words Assessments, Rigby Reading A-Z Fluency Assessments, and Sentence Complexity Assessments. The researcher explored the impact of the short term emergency, direct instruction vocabulary intervention on two groups of students, those

predicted to score below state reading standards and those predicted to meet or exceed state reading standards, in order to inform decisions about future vocabulary instruction.

### **Problem Statement**

Vocabulary knowledge is required in order to achieve the ultimate reading goal, comprehension. Children enter school with significant differences in vocabulary knowledge. Those from higher economic backgrounds have generally heard thousands more words before entering Preschool than those from low economic backgrounds (Hart & Risley, 1995). These differences grow larger in the early grades (Biemiller & Slonim, 2001). Whether using results of the National Assessment of Education Progress, local standardized testing, or informal classroom assessment, this achievement gap becomes more evident by fourth grade and increases as children get older (Sanacore & Palumbo, 2009).

In order to close that gap, Michael Graves (2006) states that students with limited vocabulary must catch up at an accelerated rate in order to be on the same academic level as their peers. He advocates that a program to address this need must be designed to be ongoing and have the flexibility to meet the needs of all learners. Graves estimates three years as a reasonable estimation of time for first graders to catch up, while older students in the same predicament may need more time.

This is an alarming dilemma because, “There is never enough time!” is a common teacher complaint. Given that researchers and practitioners interested in accelerating academic achievement face this difficult challenge, how best to leverage scarce instruction time (Coyne, et al., 2009), it is imperative to discover and implement only the most effective instructional strategies.

Compounding this time challenge is what Jeanne Chall (1996) describes as a critical fourth grade transition in her Stages of Reading Development as moving from “learning to read” to reading to learn.” This phenomenon is oftentimes referred to as the Fourth Grade Slump. Furthermore, although second and third grade low income children’s achievement was comparable to that of the normative population, by fourth grade, some children’s scores began to decline, starting in the area of vocabulary (Roswell & Chall, 1992). Stanovich (1986) concluded that weak vocabularies can create vicious cycles for readers, leading to less enjoyment in reading, less reading time, and failure to develop the vocabularies they need to become strong readers and comprehenders.

Not all programs put enough emphasis on direct instruction of vocabulary. Educators continue to struggle with identifying the most effective practices given both limited instructional time and limited funding. “With President Obama and U.S. Secretary of Education Arne Duncan calling for more learning time and bringing federal resources to bear, interest in this reform has grown. Yet in a time of resource challenges, many educators see the cost of expanding learning time as a barrier” (Gabrieli, 2011/2012, p. 24).

With the realities of Summer Learning Loss (Borman & Bouley, 2004) fast approaching those students beginning the fourth quarter of the school year, it is imperative to discover how to best meet their challenges regarding vocabulary acquisition.

Thus, the purpose of this study was to explore the relationship between the direct instruction of vocabulary in the fourth quarter of fourth grade, using Marzano’s (2009)

Six Step Vocabulary Process, and the effects on student achievement as measured by Vocabulary Words Assessments, Rigby Reading A-Z Fluency Assessments, and Sentence Complexity Assessments.

### **Research Questions**

The following research questions were drawn from the literature and served to guide the study by analyzing achievement outcomes, after nine weeks of direct vocabulary instruction.

1. Is there a statistically significant difference in vocabulary scores as measured by the Vocabulary Words Assessment from pretest to posttest between fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards)?

2. Is there a statistically significant difference in fluency scores, as measured by the Rigby Reading A-Z Fluency Assessment, from pretest to posttest between fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards)?

3. Is there a statistically significant difference in sentence writing scores as measured by the Sentence Complexity Assessment from pretest to posttest between fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards)?

### **Definition of Terms**

*Acuity.* Acuity is the name of a diagnostic test designed by CTB/McGraw-Hill (2012) to predict student achievement on state exams and to improve student learning. Predictive Acuity scores will be used to identify the two groups for this study, students

who are predicted to score below state reading standards and students predicted to meet or exceed state reading standards.

*Direct Instruction.* Direct instruction refers to systematic and explicit instruction (Stockard, 2010), delivered by the teacher, as opposed to students learning vocabulary meanings indirectly by reading independently.

*Cloze Sentences.* Incomplete sentences that include a blank to encourage thoughtful completion are cloze sentences.

*Fourth-Grade Slump.* Fourth-grade slump is a term referring to the time when students fall behind in reading (Chall, 1983). Fourth grade students are expected to “read to learn” after “learning to read” in the primary grades, given the introduction of a more extensive vocabulary, a heavier content load, and a need for more background knowledge (Chall & Jacobs, 2003).

*Gradual Release Model.* The Gradual Release Model includes modeled, shared, guided, and independent instruction. Students are supported throughout the instruction until mastery is achieved.

*Marzano’s Six Step Vocabulary Process.* This instructional process is outlined below (Marzano, 2009).

1. Provide a description, explanation, or example of the new term.
2. Ask students to restate the description, explanation, or example in their own words.
3. Ask students to construct a picture, pictograph, or symbolic representation of the term.
4. Engage students periodically in activities that help them add to their knowledge of the terms in their vocabulary notebooks.
5. Periodically ask students to discuss the terms with one another.

6. Involve students periodically in games that enable them to play with terms.

*Reading Comprehension.* Reading comprehension is the understanding or processing of meaning during and after reading. Comprehension, gaining a deep understanding of the author's message, is the ultimate goal of reading.

*Reading Fluency.* Reading fluency is the ability to read, expressively, meaningfully, with appropriate phrasing, and at an appropriate rate. Fluent readers do not need to think about each word as they decode it or sound it out; rather they recognize words in print automatically and can devote their attention to the most important part of reading, comprehension. (Rasinski & Padak, 2004)

*Reading Vocabulary.* Reading vocabulary refers to the total number of words students read, recall and understand. Word knowledge is synonymous with reading vocabulary. Students who achieve at high levels have extensive reading vocabularies.

*Real World Experiences.* Real world experiences reflect the prior knowledge students possess about any given topic. When connecting new vocabulary words to real world experiences or prior knowledge, vocabulary learning is enhanced.

*Rigby Reading A-Z Fluency Assessment.* Rigby Reading A-Z Fluency Assessment refers to three, one-page lists of sentences that increase in difficulty, and were used as pre and post measures. Each of these measures, Form 1, Form 2, and Form 3, has a fluency and comprehension component. Students practice Rigby A-Z Fluency Passages, one-minute timed readings, throughout each school year in order to determine instructional and independent reading levels (Reading A-Z, 2012).

*Short-term.* Short term refers to the brief amount of time the direct instruction of vocabulary is delivered in this study, nine weeks.

*Summer Learning Loss.* Summer Learning Loss is knowledge acquired during the regular school year that is lost over the summer months. Alexander, Entwisle, and Olson (2007) define Summer Learning Loss as the “educational deficiency students experience from the long summer vacations which break the rhythm of instruction, lead to forgetting, and require a significant amount of review when students return to school in the fall” (p.167). The average summer learning loss in math and reading for American students amounts to one month per year (Smink, 2011).

*Vocabulary.* A person’s vocabulary is the set of words they know and understand. A vocabulary develops with age and impacts all communication skills. The acquisition of an extensive vocabulary is directly related to student achievement.

*Vocabulary Intervention.* A vocabulary intervention is a strategy designed to address a specific need and taught for a specific purpose. In this study, the intervention that will be implemented is Marzano’s Six Step Vocabulary Process.

### **Assumptions and Strengths**

This study had many strong features. Given that the researcher has completed a Masters Degree in Reading, coached teachers and students in reading for eight years, and implemented Marzano’s Six Step Vocabulary Process, it is assumed that Marzano’s application and innovation levels of implementation were correctly applied. Strategies used at the beginning and developing levels were not used. They are less effective and oftentimes skew the results of strategy implementation (Marzano, 2011/2012). “Simply using a strategy does not guarantee positive results. Rather, it's *how* someone uses the strategy that determines whether it produces great results, mediocre results, or no results at all” (Marzano, 2009, p.122).



The researcher implemented Marzano's Six Step Vocabulary Process 15-20 minutes per day, depending on the amount of engaging discussion time, in the fourth quarter of the school year. It is assumed students were attentive to the engaging, interactive vocabulary strategies and put forth their best efforts.

As administrator at the study school, the researcher had ethical access to Acuity results. These results were used to identify students predicted to score below state reading standards and students predicted to meet or exceed state reading standards, thus formulating the two comparison study groups. In addition, the school district supports and encourages the implementation of direct vocabulary instruction that reflects Marzano's Six Step Vocabulary Process (Marzano, 2004). Professional development and district resources are plentiful. District-level administrators visit schools, regularly, in support of all district initiatives, including Marzano's Six Step Process in this study.

### **Delimitations of the Study**

The study was delimited to one class of fourth graders in a large Midwestern urban school district who were in attendance the fourth quarter of the school year. In addition, the students completed the midyear Acuity reading assessment.

### **Limitations of the Study**

This exploratory comparative study was confined to one fourth grade class of participants at one elementary school. Students were not randomly assigned to classrooms; they were assigned by the principal with the goal of optimal student achievement in mind. The length of the study was one quarter of the school year, nine weeks. This limited sample size and length of study may limit the utility and ability to generalize the study results and findings. In addition, the pre and post assessments that

were used to measure progress are not norm referenced for use outside of the research school.

### **Significance of the Study**

Significant results of this exploratory study have the potential to inspire further research and inform curricular decisions, practices, and procedures at local and district levels. Researchers, administrators, and practitioners can benefit from findings that promote optimal reading achievement.

### *Contribution to Research*

Limited research is available to draw conclusions about the implementation of an emergency, short-term vocabulary intervention in the fourth quarter of fourth grade. Results of this study may contribute to the theoretical literature on the effects of direct instruction of vocabulary, using Marzano's Six Step Vocabulary Process, on the reading performance of two groups, those predicted to score below state reading standards and those predicted to meet or exceed state reading standards. Further research projects related to the impact of both direct and indirect vocabulary instruction, of students at various reading levels in the fourth grade, may result.

### *Contribution to Practice*

This study indicated reading performance areas of both high and low performing students that were impacted the most by the short-term, fourth quarter use of direct vocabulary instruction. These results may encourage a stronger focus on the importance of vocabulary instruction. Instructional planning for summer school and recommendations for homework activities are informed. The results may also assist fourth grade teachers in determining instructional strategy choices not only in the fourth

quarter of the school year, but throughout the entire year. In addition, teachers' perceptions of the capabilities of their low achieving students are enlightened.

### *Contribution to Policy*

The results of this study encourage a strong focus on vocabulary, especially in the fourth grade. Many programs diminish the importance of direct teaching of vocabulary and focus upon incidental and/or indirect vocabulary development, which is increasingly difficult for low socio-economic students. Careful consideration of the importance of vocabulary development to reading achievement should impact purchasing decisions of instructional resources at district levels. Urban districts may pool resources differently given the results of this study.

Instructional decisions about district resources in extended learning situations for fourth graders are informed. A strategic shifting of funds, within school districts and individual schools, is opening more and more opportunities for extended learning time. "Some schools have been able to include extended learning time at no overall higher cost, even as they pay teachers more" (Gabrieli, 2011/2012, p. 27). Given the marked progress students demonstrated in this study, and extended learning opportunities, careful district planning and informed curricular decisions have the potential to raise students' reading achievement significantly.

### **Organization of the Study**

The literature review relevant to this study is presented in Chapter 2. The research design, methodology, and procedures that were used to collect and analyze the data in this study are detailed in Chapter 3. Statistical analyses are in Chapter 4 with conclusions and discussions in Chapter 5.

## Chapter 2

### Review of the Literature

According to the National Reading Panel's Report (2000), reading success is dependent upon each of the five components of reading: (1) phonemic awareness, (2) phonics, (3) vocabulary, (4) fluency, and (5) comprehension. Each component is critical to the ultimate goal of reading, gaining a deep understanding of the author's message. Readers best understand the author's message when success has been achieved in all five components, but they have long argued over which instructional strategies best promote student success in each component.

As researchers continue to study instructional strategies, the unique challenges that arise in fourth grade are of special interest. Jeanne Chall (1983) first identified students' transition from *Learning to Read* in the primary grades to *Reading to Learn* in the intermediate grades in her six stages of reading development. Fourth graders, transitioning to Stage 3, are still rather limited in vocabulary and background knowledge and are likely to fall behind. Chall first labeled this phenomenon Fourth Grade Slump.

A most significant reading research finding (Chall, Jacobs, & Baldwin, 1990) indicates that low income children in second and third grade achieved as well as children in the normative population on six subtests, but achievement began to decline around fourth grade. The subjects in this two-year study were thirty children, about ten each from second, fourth, and sixth grades.

Reading measures included scores on the six subtests of the experimental version of the Diagnostic Assessments of Reading (DAR) that consist of word recognition, word analysis, oral reading, word meaning, reading comprehension, and spelling. Of first and

greatest concern, low-income children's strongest decline began in fourth grade with word meanings as compared to the normative population on the word-meaning test. In fourth grade, low-income students were about a year behind grade norms and by seventh grade, two or more years.

A follow up study of the same low-income subjects was conducted five years later (Snow, et al., 1998). Findings on the majority of tests indicated the same students' scores were below norms and that discrepancies between subjects' scores and norms were greater in each succeeding grade. By eleventh grade, subjects' reading achievement scores were considerably below their achievement in fourth and seventh grade. They ranked in the 25<sup>th</sup> percentile.

This eventual decline may be due to the increased complexity of vocabulary words in the fourth grade. Kindergarten through third grade students may initially do well in silent reading because vocabulary words are less complex. As complexity increases in fourth grade, the use of context clues may mask students' struggles with word meanings early on. Teachers may not recognize students' weaknesses until context clues are no longer enough support for students to comprehend text. The sooner weaknesses are recognized and addressed, the easier it will be for students to cope with the increasing literacy demands in the later grades (Chall & Jacobs, 2003).

Determining strategies to eliminate the effects of Fourth Grade Slump is obviously defensible. This phenomenon is compounded further by instructional time challenges and the realities of Summer Learning Loss. By the fourth quarter of the fourth grade, the urgency to implement the most effective strategies is evident. Researchers' commentary, insights, and studies, related to Fourth Grade Slump, instructional time

challenges, and Summer Learning Loss, formulate a strong case for the direct instruction of vocabulary. Evidence follows.

### **Fourth Grade Slump**

Allington and Cunningham (2007) believe a strong focus on teaching the basic skills, usually referred to as the three Rs, reading, 'riting, and 'rithmetic, in grades K-3 results in short term gains, but long term deficits. Teachers spend exuberant amounts of time in the early grades ensuring students master letter names, letter sounds, sight words, and decoding skills in order to read. Mastering all basic math facts and math computations is a priority, as well. Devoting extended time to assist students who struggle with the basics leaves little time to explore new content knowledge in depth.

As a result, a marked knowledge deficit often "rears its ugly head in third or fourth grade" (Allington & Cunningham, 2007, p. 54) when even average students can't read the textbooks or can "read" them but not understand what they are reading. This knowledge deficit of critical school topics lingers as children move through the grades. Chall (1990) confirms that declining comprehension scores in the later elementary years were found in children with restricted vocabulary by third grade. In addition, Biemiller & Boote (2006) found that around fourth grade, many children experience a slump in reading comprehension, further establishing the Fourth Grade Slump phenomenon and the importance of vocabulary knowledge to comprehension.

Educational researchers have explained that part of the Fourth Grade Slump is due to students having difficulties with informational texts (Chall, Jacobs, & Baldwin, 1990). Hall and Sabey's (2007) research-based examination of informational text explained many difficulties students have with this genre. The first difficulty is related to

vocabulary knowledge. They explained that, "comprehension can dramatically decrease if a reader skips or ignores unfamiliar words that seem difficult" (2007, p. 262).

Informational text features are unique and need to be addressed through explicit instruction. Teachers focusing on basic skills in Grades K-3, who spend additional time supporting struggling learners, have little to no time for explicit instruction of informational text features. The likelihood of Fourth Grade Slump is evident.

Stockard (2010) describes a first through fifth grade study designed to promote reading achievement and counter the Fourth Grade Slump. She recognizes that even when low-income children approach the achievement levels of their more advantaged peers in the early grades, differences between them often widen in the later elementary years (Chall & Jacobs, 2003; Chall, Jacobs & Baldwin, 1990; Hirsch, 2003; Rosenshine, 2002).

Results of the research study indicate that students in schools using direct instruction had "significantly greater gains in both reading vocabulary and comprehension than students in the two other settings. Their average levels of achievement in fifth grade were above the national norms, thus countering the Fourth Grade Slump" (Stockard, 2010, p. 218).

### **Instructional Time Challenge**

Results of studies related to the direct instruction of vocabulary are encouraging, but the element of time continues to be a challenge in schools today. Although multiple studies have demonstrated statistically significant gains, the time necessary to effectively employ direct instruction of vocabulary often impedes action. Longo and Curtis (2008) describe a vicious cycle when learners with vocabulary needs are expected to learn new

words from context, when their difficulty in understanding what they read prevents them from benefitting from any context clues at all. Valuable instructional time is lost when students become frustrated. “Improving the vocabulary knowledge of our lowest achieving readers can only be accomplished through direct and explicit instruction of word meanings” (Longo & Curtis, 2008 p. 23). This takes time!

Despite this fact, Biemiller and Boote’s (2006) extensive work with primary grades teachers, in both public and parochial schools, yielded the suggestion that most teachers objected to spending more than 30 minutes a day on vocabulary instruction. This may be due to the previously mentioned focus on teaching the basics, usually referred to as the three Rs, reading, ‘riting, and ‘rithmetic. Allington and Cunningham (2007) state that the subjects of science and social studies are almost ignored, given little to no time in the primary grades of some schools. Being introduced to the challenging vocabulary words in science and social studies, without sufficient instructional time devoted to each word, fourth grade students are at risk of beginning to flounder and falling into the Fourth Grade Slump.

Countering the Fourth Grade Slump is the direct, explicit instructional approach that promotes time on task. Rupley, Blair, and Nichols (2009) state that the use of the direct, explicit approach facilitates active student engagement. Classrooms in which students are actively engaged in learning for a large proportion of the time demonstrate higher achievement in reading and writing (Rupley, Blair, Nichols, 2009). By using direct, explicit instruction, scarce instructional time is maximized.

How best to leverage scarce instructional time remains a difficult challenge to researchers and practitioners interested in accelerating academic achievement. In the



following vocabulary intervention research, discussions about leveraging instructional time revolve around the trade-offs between teaching for breadth or depth. The following researchers explored the effects of increasing instructional time and providing more exposures to target vocabulary words in varied contexts.

Coyne, McCoach, Loftus, Zipoli, and Kapp (2009) compared methods for teaching word meanings in a research study including forty-two kindergarten students who were taught nine target words, three with each method. Results indicated that there were statistically significant differences at post-test favoring words taught with extended and embedded instruction over words receiving only incidental exposure during story reading on all measures. These findings converge with others suggesting that increasing instructional time and providing more exposures to target vocabulary in varied contexts leads to enhanced word learning (Beck & McKeown, 2007 cited by Coyne, et al, 2009), confirming an answer to the instructional time challenge. It begins in Kindergarten!

With the challenge of leveraging scarce instructional time beginning in Kindergarten, the choosing of vocabulary words becomes a major consideration. “Given that students need to acquire a tremendous volume of vocabulary words each year, it seems careless to squander valuable instructional time on words that function only as labels in a particular reading” (Frey & Fisher, 2007, p. 73). As Frey and Fisher allude to the dangers of squandering valuable instructional time, teachers with struggling fourth grade students, and only one quarter of the school year remaining, face an emergency situation. Which strategy should be used and which words should be taught? Research supports the direct instruction of vocabulary but the amount of time it will take for each learner is unclear. In addition, success is rarely achieved by all, with any given strategy.

Researchers and practitioners concur that discovering individual learning styles and using the right amount of direct/explicit instruction is the foundation of effective reading instruction. “One reality that makes reading instruction complicated is that no assessment blueprint spells out precisely where and how much instructional time and effort teachers should devote to each instructional task or strand. Also, no blueprint says which instructional techniques work best with individual learners” (Rupley, Blair & Nichols, 2009, p. 136).

In contrast, research shows that instruction geared to common learning characteristics can be more effective than instruction focused on individual learners. Teachers can make great strides in improving student achievement by leveraging this body of research and teaching to commonalities, not differences. Marzano’s (2009) Six Step Vocabulary Process aligns with this body of research. Instruction geared to common learning characteristics instead of individual differences can obviously increase efficiency because the teacher no longer needs to teach different lessons to students assigned to different categories (Willingham & Daniel, 2012).

### **Summer Learning Loss**

Whether devoting instructional time based on individual learners or common learning characteristics, the realities of Summer Learning Loss compound learning issues related to the Fourth Grade Slump phenomenon. Alexander, Entwisle, and Olson (2007) define Summer Learning Loss as the “educational deficiency students experience from the long summer vacations which break the rhythm of instruction, lead to forgetting, and require a significant amount of review when students return to school in the fall” (Alexander, et al., 2007, p.167). The following study compares summer learning and

school year learning of 326 randomly selected students from twenty public elementary schools, beginning in first grade through the spring of year nine. Results indicate the effects of differential summer learning over the elementary years (Alexander, Entwisle & Olson, 2007).

Long term educational consequences of summer learning differences were determined in the study. Researchers used eleven testing points, fall and spring for each of the first five years plus spring of year nine. Separate fall and spring California Achievement Test scores in reading (CAT-R) from school records were used for years one through five and Reading Comprehension and Math Concepts subtests were used, calculating overall gains at the end of year nine. (The research school district discontinued CAT-R at year nine.) Complete test data was available for 326 of the original 790 subjects.

In comparing the college track/high SES group to the non-college track/low SES group, there was a 116.1 points (1.3 SD) difference between them on year nine achievement averages. More than half of the difference (76.5 points) traces back to summer learning differences carried forward from elementary school.

Results are even more pronounced when comparing low SES permanent dropouts and high SES youth who attended four-year colleges. Year nine achievement differences were 133.0 points (1.4 SD). Disparity substantially traces back to the groups' unequal experience of summer learning over the early formative years. This accounts for 86.6 scale points or 65% of the total, suggesting that Summer Learning Loss in the early years of schooling has a profound impact on students' educational success in the long term.

A large body of research has long confirmed the short-term effects of Summer Learning Loss. A research synthesis conducted by Cooper, Nye, Charlton, Lindsay, and Greathouse (1996) integrated 39 studies examining the effects of summer vacation on standardized achievement test scores. Of the 39 studies, results from 13 were eligible to be included in a meta-analysis. This statistical integration indicated that Summer Learning Loss was equal to at least one month of instruction, on average, as measured by grade level equivalents on standardized test scores.

In addition to finding students' test scores to be at least one month lower when they returned to school in the fall than when they left school the prior spring, researchers discovered differences in skill areas and income groups. Summer Learning Loss was more pronounced for math overall. Economically disadvantaged students experienced more pronounced declines in reading comprehension.

Specifically, the Summer Learning Loss was greater for math facts and spelling than for other tested skills. Researchers accounted for this result by observing that both math computation and spelling skills involve acquiring factual and procedural knowledge as opposed to conceptually based skill areas like math concepts, problem solving, and reading comprehension. Cognitive psychology findings suggest that without practice, facts and procedural skills are most susceptible to forgetting (Cooper & Sweller, 1987, cited by Cooper, H. 2003).

In contrast, the conceptually based skill of reading overall resulted in far less Summer Learning Loss. The researchers speculated that opportunities to practice reading skills at home may be greater and parents may be more attuned to the importance of reading over the summer. However, when family economics was examined, substantial

differences were found for reading comprehension. On some measures, middle-class students showed gains in reading achievement while economically disadvantaged students showed losses. Although reading comprehension scores of both income groups declined over the summer, scores of disadvantaged students declined more (Cooper, 2003).

The only individual difference among students that played a role in Summer Learning Loss was family economics, which affected reading comprehension scores. In further examination of the meta-analysis, neither gender, ethnicity, nor IQ appeared to have a consistent influence on Summer Learning Loss. Therefore, with additional support for disadvantaged students in reading comprehension, addressing Summer Learning Loss will have the potential to benefit all students.

Organizations have addressed Summer Learning Loss by challenging school districts to consider alternatives to the nine-month school calendar. School calendars were designed to fit the needs of each particular community in the early years of formal schooling in America. The current nine-month calendar is based on antiquated conditions when 85% of Americans were involved in agriculture and year round climate control in school buildings was nonexistent.

With conditions of today, about 3% of Americans' livelihoods tied to the agricultural cycle and the availability of air-conditioning (Association of California School Administrators, 1988 cited by Cooper, 2003), the nine-month school year remains the standard. The argument continues.

In 1993, the National Education Commission on Time and Learning (NECTL, 1993, cited by Cooper, 2003) urged school districts to develop school calendars that

recognized differences in student learning and major changes taking place in American society. Their report stated a special concern for students at risk of academic failure. In addition, long summer vacations break the rhythm of instruction, lead to forgetting, and require the need for significant reteaching in the fall.

The Summer Learning Loss that occurs as a result of long summer vacations, away from academics, compounds existing vocabulary challenges that first lead to Fourth Grade Slump (Chall, 1983). Without sufficient vocabulary knowledge, the ultimate goal of reading, gaining a deep understanding of the author's message, is non-attainable. Comprehension of text declines.

### **Vocabulary and Comprehension**

Comprehension is the reason for reading, and vocabulary plays a significant role in comprehension (National Institute of Child Health and Human Development, 2000). For much of the twentieth century, vocabulary research consisted of word lists and was viewed as a subset of either comprehension or spelling. It was rarely examined closely as a key component of gaining a deep understand of the author's message.

A more encouraging message from the National Reading Panel Report (2000), states that the importance of vocabulary in reading achievement has been recognized for more than half a century. Rightfully so, researchers adjusted their lenses and recognized that vocabulary occupies an important position in learning to read. Vocabulary is tied to words while comprehension is tied to thoughts about larger units of information (National Reading Panel Report, 2000).

Rupley, Logan, and Nichols (1998/1999) argued, "vocabulary is an essential and overlooked component in any balanced literacy program..." (Kieffer & Lesaux, 2007,

p.134, cited by Rupley, et al., 1998/1999). They found that academic vocabulary is a most critical need when assisting students in meeting and exceeding state standards, but the focus on new and challenging words is lacking. Beck and McKeown (2007) concur that schools are not doing much with vocabulary. They go as far as to say almost no emphasis is placed on vocabulary acquisition in the current curriculum.

Beck and McKeown (2007) found that a large, rich, strong vocabulary is related to reading proficiency, so they are understandably concerned about the lack of focus on vocabulary. Students' vocabularies play important roles in their lives and their possibilities far into their futures. Although all students' vocabularies grow during their school years, some students begin their formal schooling with a command of far fewer vocabulary words than their peers. Many of these students, especially those from low socio-economic families, never catch up to their peers. Hart and Risley (2003) referred to this disparity as The 30 Million Word Gap.

In their study, they began recording everything that went on in children's homes from the time they were seven to nine months old until they reached the age of three. Children were recruited from birth announcements using two criteria, a range in demographics and stability. Recruiting letters were sent selectively to maintain the gender balance and the representation of socioeconomic strata. Forty-two families remained in the study from beginning to end. Sequential, monthly, hour-long observations of utterances per hour and different words per hour, as well as other characteristics, spanned almost two and one half years per family. They found that the forty-two children mirrored their parents in stature, activity levels, vocabulary resources, and language and interaction styles.

In additional findings, 86 percent to 98 percent of the vocabulary words children spoke, were the same words their parents used. Trends were well established and suggested widening gaps to come. It took six years of examination of the 1,318 observations that were entered into the computer, requiring twenty-three million bytes of computer file space. All data was checked and rechecked for accuracy and random samples were assigned. Results, based on extrapolation to age four and often challenged by researchers, state “In four years, an average child in a professional family would accumulate experience with almost 45 million words, an average child in a working-class family 26 million words, and an average child in a welfare family 13 million words” (Hart and Risley, 2003, p. 9).

This 30 Million Word Gap may be challenged by some, but was upheld by researcher, Dale Walker, who recruited 29 of the 42 families to participate in a follow-up study when their children were nine to ten years old. Two measures, receptive vocabulary and language development, were used to determine these third grade students’ achievement.

In both measures, the rate of vocabulary growth at age three was strongly associated with scores at age nine to ten. Walker confirmed Hart and Risley’s (2003) confidence in this relationship after they had discovered the 30 Million Word Gap. Additionally, the Comprehensive Test of Basic Skills indicated vocabulary use at age three was also strongly associated with reading comprehension scores of the same children in third grade (Hart and Risley, 2003).

There has long been a strong correlation between vocabulary knowledge and comprehension. Chall et al. (1990) found that children with restricted vocabulary by



third grade have declining comprehension scores in the later elementary years. In other words, for reading comprehension to occur, students must know the meanings of the words they read (Richek, 2005). The reciprocal relationship between reading comprehension and vocabulary acquisition is obvious. A greater vocabulary leads to greater comprehension. A better grasp of the meanings of words makes an increasing number of words available to students as they attempt to construct meaning from their new studies (Stanovich, 1986).

As students begin fourth grade, constructing meaning from their new studies is particularly difficult. Vocabulary becomes increasingly complex and fourth grade students are expected to *Read to Learn*, after *Learning to Read* in the primary grades (Chall, 1983). Vocabulary knowledge is, and appears to have always been, among the best predictors of reading achievement (Richek, 2005).

Vocabulary is the crucial key that unlocks insight into all subjects. It is critical for students to learn new words, with a depth of knowledge that holds them in long-term memory. Word knowledge contributes to achievement in all content areas that are taught in school curriculums (Smith, 1997). In addition, Carlo and Snow (2006) found that students who have developed an extensive word bank can retrieve words effortlessly and find richer meaning as they are exposed to new, grade level texts.

Students who cannot retrieve words effortlessly will experience marked struggles in comprehension. As fourth grade texts become more difficult and include more complex vocabulary words, students' efforts to figure out word meanings cause delay in the flow of understanding the author's message. Stahl's (2003) work asserts that the failure to understand even 2% of a text begins to erode students' comprehension. He has

reported that vocabulary knowledge is the most important indicator of oral language proficiency and, as such, drives both spoken and written language.

Vocabulary is the most important indicator. Biemiller and Slonim (2001) reported that students who are behind in vocabulary knowledge in third grade are destined to remain behind throughout their school years. They found that second grade students in the highest quartile of vocabulary knowledge acquired an average of 7,100 root words and students in the lowest quartile, an average of only 3,000 root words. The authors agree that students in the lower quartile could be brought up to grade level, but it would take extensive vocabulary instruction in the short term, as comprehension would continue to falter. If students are not brought up to grade level by the end of third grade, their falling prey to Fourth Grade Slump is likely.

Once in fourth grade, if vocabulary knowledge is not focused upon, students' comprehension scores begin to decline. The difficulty of catching up to grade level escalates into a crisis because beginning in fifth grade, students will be expected to move on with even more complex vocabulary words. Although, it is never too late. The results of a research study of fifth grade students (Baumann, 2002 cited by Frey & Fisher, 2007) are encouraging. The study involved specifically teaching students vocabulary strategies. Word knowledge increased significantly.

Truly, the focus is about word knowledge. Lower quartile children could be brought up to grade level, but to do so would take extensive vocabulary instruction and most schools do not promote such programs (Boulware-Gooden, et al., 2007). Current school practices allow widening of vocabulary gaps in the primary years. Unlike spelling or decoding, there is no established method of teaching vocabulary in the primary grades

(Biemiller & Boote, 2006).

In response to concerns about programs and methods, the instrument in this study does promote extensive vocabulary instruction and does establish a specific, research-based method for direct instruction of vocabulary to be employed at all grade levels, Robert Marzano's Six Step Vocabulary Process.

### **Direct Instruction of Vocabulary**

Robert Marzano (2003) describes both indirect and direct instructional approaches to vocabulary in terms of their effectiveness in enhancing crystallized intelligence, permanent memory organized in modular form. Researchers agree that the goal of vocabulary instruction is to cement words in permanent memory, but they differ in their opinions about which approach is most effective.

In indirect vocabulary instruction, students employ wide reading and build vocabulary knowledge during independent reading time. Nagy and Herman (1987, cited by Marzano, 2003) believe that direct instruction exposes students to far less words than they would encounter in wide reading. They estimate that even if one in 20 of the total words students encounter in wide reading were learned, they would make a yearly gain of between 750 and 1,500 words. This compares to their estimates of only a 300 word yearly gain using direct instruction of vocabulary in the classroom.

Nonetheless, research on wide reading has produced ambiguous results regarding its effectiveness on improving reading comprehension (National Institute of Child Health and Human Development, 2000). In addition, findings are inconsistent whether or not wide reading has a positive impact on vocabulary development (Elley, 1989). Marzano

(2003) does not support wide reading as sufficient for ensuring proper vocabulary development.

Beck and McKeone (1991, as cited by Marzano, 2003) concur by stating that several decades of research has failed to produce evidence that word meanings are routinely acquired from text. Furthermore, students must be exposed to a word about six times before they have enough experience with it to remember its meaning (Jenkins, Stein, & Wysocki, 1984). Stahl and Fairbanks (1986) agree that multiple exposures to words promote a better understanding of meaning.

In review of the literature, a much larger body of research supports just the opposite of indirect vocabulary learning through wide reading, the direct instruction of vocabulary. Mark Haystead and Robert Marzano (2009) conducted a meta-analytic synthesis of instructional strategies that included independent studies at thirty-eight schools in fourteen school districts between fall of 2000 and spring of 2009. The independent studies involved 7,872 students in the experimental groups and 6,415 students in the control groups.

Their report synthesizes a series of quasi-experimental studies conducted as action research projects to determine the effects of utilizing a selected group of fifteen instructional strategies. Students could not be randomly assigned to experimental and control groups, so all studies applied a quasi-experimental, pretest-posttest, non-equivalent groups design. The pretest scores were used as a covariate to partially control for differing levels of background knowledge and skill.

The average effect size for all 329 independent studies was statistically significant ( $p < .0001$ ). On the average, the instructional strategies used in the independent studies

represent a gain of 16 percentile points over not using the strategies. It is reasonable to infer that the overall effect of a 16 percentile point gain is probably not a function of random factors that are specific to the independent studies. It represents a real change in student learning (Haystead and Marzano, 2009).

A marked improvement in student learning was related to vocabulary building that involved the use of Robert Marzano's (2004) Six Step Vocabulary Process. His process includes teacher explanation, student explanation, student graphic or pictographic representation, review using comparison activities, student discussion of vocabulary terms, and use of games. Of the two to thirty-four percentile spread, Marzano's (2004) Six Step Vocabulary Process resulted in a twenty percentile gain. Only two of the fifteen instructional strategies ranked higher in percentile gains, Setting Goals/Objectives and Tracking Student Progress and Scoring Scales. This strong study obviously supports the implementation of Marzano's (2004) Six Step Vocabulary Process.

This process also aligns with most all of the recommendations from the National Reading Panel (2000) that include the following perceptions on vocabulary acquisition.

1. Vocabulary should be taught directly and indirectly.
2. Repetition and multiple exposures to vocabulary items are important.
3. Learning in rich contexts is valuable for vocabulary learning.
4. Vocabulary tasks should be restructured when necessary.
5. Vocabulary learning should entail active engagement in learning tasks.
6. Computer technology can be used to help teach vocabulary.
7. Vocabulary can be acquired through incidental learning.
8. How vocabulary is assessed and evaluated can have differential effects on

instruction.

In the decade following the National Reading Panels recommendations, vocabulary instruction received little attention (Taylor, et al., 2009). Taylor and his colleagues proposed that direct and explicit instruction of vocabulary should help struggling readers improve their ability to read informational text. They argued, as did Rupley (2009), that vocabulary instruction should be an ongoing and integral part of all reading instruction, in all subject areas. Fourth grade students who begin to read these subject area texts encounter unique challenges and need additional vocabulary support to maintain motivation.

Baumann and Duffy (1997) of the National Reading Research Center summarized the key ideas that are instrumental in fostering motivated, lifelong readers. Five years of research on fostering reading growth showed that reading skills and strategies can be taught effectively and efficiently in preschool and elementary school reading programs when instruction is systematic and explicit.

Marzano's Six Step Vocabulary Process is systematic and explicit. In closely examining the process, implementation incorporates a variety of research-based strategies. In review of the literature, each individual step is supported by a large body of research that aligns with multiple researchers' beliefs about effective vocabulary instruction.

Blachowicz and Fisher (2000) identified four principles for effective vocabulary instruction. They advise that students be actively involved in word learning, make personal connections, be immersed in vocabulary, and use multiple information sources to consolidate meaning. These researchers noted that, while these principles applied to

all learning, their experience has shown that they are critical for successful vocabulary acquisition and retention. Marzano's Six Step Vocabulary Process provides a prescription for putting Blachowicz and Fisher's (2000) four principles into practice.

### *Step 1*

*Provide a description, explanation, or example of the new term.*

Direct explicit instruction provides clear descriptions of new terms. It is not effective to allow students to guess at the meanings of new vocabulary words. Explicit explanations, using student-friendly language, ensure students do not develop incorrect versions of the true meanings of words.

Explanations that incorporate a broad variety of concrete and abstract examples are recommended (Kalyuga, et al., 2001). Garcia (2008) urges teachers to use visuals, gestures, and dramatization to illustrate key textual concepts. Student background knowledge should be tapped through resources such as graphic organizers and other demonstrations, claims Huebner (2009). Researchers recommendations are numerous and can seem quite overwhelming, but Suhad and his colleagues found it to be quite simple. A 52% increase in meaning recognition scores resulted after simple, brief and explicit explanations of words, not exceeding one minute, were provided. (Sonbul & Schmitt, 2010).

An experimental study (Sonbul & Schmitt, 2010) confirms the effectiveness of explicit instruction of word meanings. After pretests confirmed vocabulary words were unfamiliar to the forty students in the experimental study, students were given a brief, explicit explanation of each word. The explanations did not exceed one minute for any target item. In comparison, researchers found that students receiving explicit explanations

of vocabulary words scored higher in all three levels measured than students expected to learn the words by simply reading. Form recall scores were nine percent higher. Meaning recall scores were nineteen percent higher. And, most revealing, meaning recognition scores were 52% higher.

### *Step 2*

*Ask students to restate the description, explanation, or example in their own words.*

When students use their own words to restate word meanings, they are building background knowledge. According to Nuthall (1999), when students have exposure to new vocabulary words, no more than two days apart, there is a higher probability that the words will become integrated as new knowledge. In addition, Rovee-Collier (1995) noted that a minimum of three to four exposures to new content is necessary for it to be integrated into an existing knowledge base. For many struggling students, even more exposures are necessary.

Several methods to achieve word understandings and meet the needs of struggling students are brought out in the literature. Scaffolding is a well-established teaching strategy for vocabulary. Teachers support students as new vocabulary words are introduced, then offer lesser amounts of support as the new vocabulary words are learned.

Scaffolding facilitates a student's ability to build on prior knowledge and internalized information (Van Der Stuyf, 2002). One of the most extensive investigations of the relationship between prior knowledge and academic achievement was conducted by Dochy, Segers, and Buehl (1999, cited by Marzano, 2003). Ninety-one percent of the 183 studies analyzed demonstrated positive effects of background knowledge on learning.



### *Step 3*

*Ask students to construct a picture, pictograph, or symbolic representation of the term.*

Chard and Kameenui (2000) claim that classroom practices have not kept pace with the knowledge related to struggling readers since the 1980's. They argue that much more needs to be done. Messages, it appears, are composed of ideas and ideas are expressed in words. Students do better when they construct meaning rather than memorize definitions (Chard and Kameenui, 2000). One of the best ways to construct meaning of a new vocabulary word is to elaborate on the word by generating imagery representations of its meaning (Marzano, 2003).

The impact of generating imagery, which is constructing a picture, pictograph, or symbolic representation of a word, is quite strong. Glen Powell's (1980, cited by Marzano, 2003) analysis of eleven controlled studies found that instructional techniques using imagery produced achievement gains in word knowledge that were 34 percentile points higher than techniques that did not incorporate imagery.

### *Step 4*

*Engage students periodically in activities that help them add to their knowledge of the terms in their vocabulary notebooks.*

Teachers who tie instruction to word meanings find more success than those who do not according to Stahl and Fairbanks (1986). Using vocabulary notebooks to record meaningful information about new vocabulary words, in a variety of ways, enhances learning. A few of the methods used to do this during classroom instruction include the use of graphic organizers, word webs, concept maps, and building on prior knowledge (Mathes et al., 2005).

The purpose of a five-week study of 119 third-grade students was to determine the effectiveness of systematic direct instruction of multiple metacognitive strategies designed to assist students in comprehending text. The investigation was also designed to determine the impact of the metacognitive strategies on vocabulary. Pretest-posttest measures resulted in a 40% difference in vocabulary gains between those receiving the intervention and the control group. Noteworthy gains of 20% were also reported in reading comprehension. (Boulware-Gooden, et al., 2007)

The intervention was applied 30 minutes daily for 25 days. The second step of the five-step intervention process was introducing vocabulary along with the completion of semantic webs that connect related words to the new vocabulary word and multiple meaning webs that display the many meanings of a word. Beck and McKeown (1991) opine the use of vocabulary webs create a more visual representation of the word's meaning and conceptual understanding. The researchers' results suggest this is true.

In order to show efficacy of the intervention, students' pretest and posttest scores on a criterion-referenced vocabulary test and a standardized reading comprehension test were analyzed to see if there was a statistically significant difference between the two groups. Means and standard deviations for pretest and posttest academic scores were calculated. The intervention group improved significantly over the comparison group in vocabulary,  $F(1, 117) = 22.521, p < .001$ , with an effect size of .161, and in reading comprehension,  $F(1, 117) = 4.28, p < .041$ , with an effect size of .041.

### ***Step 5***

*Periodically ask students to discuss the terms with one another.*

Recommendations from the National Reading Panel (2000) on the topic of vocabulary acquisition state the importance of repetition and multiple exposures to

words, as well as, the need for active engagement in learning tasks. Students who are encouraged to discuss new vocabulary words are more likely to experience higher gains in vocabulary learning.

Throughout vocabulary learning activities, lively conversations that incorporate students' personal experiences enhance learning. And, to help ensure the maintenance of vocabulary gains, it has been shown that a second reading of a story, within one week, helps prevent attrition. Students' enjoyable discussions of the happenings in stories are beneficial. The direct teaching of vocabulary, after reading, is worth the effort, as well (Sonbul & Schmitt, 2010).

### ***Step 6***

*Involve students periodically in games that enable them to play with terms.*

Pearson, Kamil, and Hiebert (2005) state that if educators design classroom experiences that are multifaceted, students will be more likely to acquire new words. Learning games ensure multifaceted experiences. They enhance individual student motivation. In order to engage students, educators must provide learning games that offer manageable challenges, arouse curiosity, and involve fantasy arousal or imaginary circumstances (Covington, 1992, cited by Marzano, 2003).

Learning games must also involve materials and content that students can handle. Providing students with opportunities to apply their reading skills and strategies in meaningful and varied types of texts, through the use of learning games, is extremely important; however, teachers must ensure a reasonable comfort level (Rupley, Blair, Nichols, 2009). If students are too easily frustrated with game materials and/or content, their motivation and engagement will be lost. Given that roughly 60 studies suggest the

use of academic games is associated with a twenty percentile point gain (Haystead & Marzano, 2009), ensuring that students experience motivation and engagement is key.

Academic learning games provide effective practice opportunities to enhance students' motivation and engagement. Practice activities in reading are extremely important for struggling readers. "Such activities are best designed around three areas: (a) planning for practice, (b) delivering effective practice, and (c) evaluating the effectiveness of practice" (Rupley & Blair, 1987, cited by Rupley et al., 2009 p. 130). It is critical to make certain all academic learning games meet the criteria for practice activities, because the goal of playing games is to provide additional practices.

Teachers should ask themselves the following questions when preparing vocabulary learning games that provide effective student practices. "Is the intended practice related to the students' needs? Is the level of the materials appropriate, and are the materials interesting? Is the content of the practice within the students' experiential background? Are different ways of practice provided to meet students' needs and maintain their interest? Is the amount of practice appropriate for the instructional period? Are directions and examples provided to students to ensure understanding (i.e., are they clear)? Is it necessary to vary the type of practice in one class period (e.g., by having students work on two or three different types of materials relating to one aspect of reading), or will one practice activity be sufficient?" (Rupley et al., 2009, p. 130).

Careful planning of practices, throughout all grade levels and content areas, is critical when preparing students for district and state assessments. As vocabulary knowledge is the best predictor of student achievement, it is critical that vocabulary instruction is effectively delivered and that practices meet the specific needs of students.

Instruction and practices must align with state standards, as well. The research study district supports teachers with this alignment by providing an online predictive assessment, then online learning tools so students can practice in the precise areas needing improvement.

Specifically, this online predictive assessment is called Acuity. The research study district's Acuity scores predict success on state reading standards assessments. Careful reviews of fourth grade predictions, as well as other grades, are conducted. Typically, fourth grade Acuity predictions in the proposed research school indicate some students are expected to meet or exceed the state standards in reading, while others are expected to score below the state standards in reading. Low scores typically mirror classroom performance and underscore a need for intervention prior to state standards testing.

### **Conclusion**

Based on the scholarly research cited throughout this literature review, and the unique implications for fourth grade, exploring the effectiveness of the direct instruction of vocabulary strategy is defensible. Vocabulary knowledge is, and appears to have always been, among the best predictors of reading achievement (Richek, 2005). This study recognizes the critical importance of vocabulary knowledge in fourth grade and explores the effectiveness of the direct instruction of vocabulary instrument, Marzano's Six Step Vocabulary Process.

## Chapter 3

### Methodology

The purpose of this study was to explore the relationship between the direct instruction of vocabulary in fourth grade, using Marzano's (2009) Six Step Vocabulary Process, and the effects on Vocabulary Words Assessments, Rigby Reading A-Z Fluency Assessments, and Sentence Complexity Assessments. The researcher studied the impact of the short-term emergency, direct instruction vocabulary intervention on two groups, students predicted to score below state reading standards and students predicted to meet or exceed state reading standards.

### Design

This study was a pretest-posttest, two group exploratory design. Raw scores were converted to scale scores. Pretest-posttest comparison group data was analyzed using two by two ANOVA, controlling for two factors, time (pre and post) and group (1 and 2). Aggregated group data, descriptive statistics, and inferential statistical analysis was utilized and reported in terms of means and standard deviations. Tables further clarify the results of statistical analysis.

The purpose of ANOVA or analysis of variance is to test for significant differences between means by comparing/analyzing variances. By comparing the two groups in this study using *t* tests for independent samples, we may arrive at the same conclusions, but the multi-factor ANOVA is a more flexible and powerful technique applicable to more complex research. With fewer observations we can gain more information (StatSoft, 2012). This design and analysis will appropriately address the

following research questions by determining whether or not there is a statistically significant difference in gains on the three measures, between groups.

### **Research Questions**

1. Is there a statistically significant difference in vocabulary scores as measured by the Vocabulary Words Assessment from pretest to posttest between fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards).

2. Is there a statistically significant difference in fluency scores, as measured by Rigby Reading A-Z Fluency Assessment, from pretest to posttest between fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards).

3. Is there a statistically significant difference in sentence writing scores as measured by the Sentence Complexity Assessment from pretest to posttest between fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards).

### **Subjects**

All fourth grade, same classroom students participated in the delivery of the short-term, emergency, direct instruction intervention, Marzano's Six Step Vocabulary Process. Study participants consisted of two groups, those predicted to score below the state reading standards and those predicted to meet or exceed the state reading standards. Predictions are based on midyear district Acuity scores. The maximum accrual for this study was the total number of students in the class.

Students who participated in the direct instruction intervention, Marzano's Six Step Vocabulary Process, in the same fourth grade class. The expected imbalance in gender ratio was congruent with enrollment patterns for students in the research school.

The age range of the students in both groups was 9 years to 11 years. All students were in the same fourth grade classroom and receive reading instruction from the same teacher. The age range of the study participants will be congruent with the age patterns for students in the research school. The racial and ethnic origins of the study participants will be congruent with the research school district's racial and ethnic origin demographics for fourth grade students.

The researcher, a long-term, licensed master reading teacher, implemented the intervention. The school improvement plan identified direct instruction and reading improvement as important goals for all students. Furthermore, the intervention was approved and supported by the school leadership team and teaching faculty. Finally, a need for additional reading intervention in this fourth grade classroom was warranted based on midyear, predictive Acuity scores. No individual identifiers were attached to the achievement data of the participating students.

### **Data Collection**

All study achievement data was retrospective and archival information. After pretesting, fourth grade students received 15-20 minutes of daily, direct instruction using Marzano's (2004) Six Step Vocabulary Process:

#### *Step 1*

*Provide a description, explanation, or example of the new term.*

On Mondays, the teacher introduced each word individually by first saying the



word aloud, then writing the word one syllable at a time. After a clear explanation of exactly what the word means, a brief sharing and discussion of how the word relates to students' real world experiences followed. Students recorded each word on a word card, then wrote an original sentence related to their own real world experiences. The teacher circulated around the room and assisted as needed. Volunteers shared their sentences. The researcher collected all cards, throughout the study.

### *Step 2*

*Ask students to restate the description, explanation, or example in their own words.*

On Tuesdays, students first read their word cards and sentences silently, then volunteered to share their sentences. The teacher encouraged conversations about expanding the meanings of sentences by adding more words . . . more detail. Students received a teacher-prepared copy of 20 to 25 sentences, written by their classmates, and ranked the sentences from one to ten. Students then shared their rankings and explained their rationale. The researcher collected all papers, throughout the study.

### *Step 3*

*Ask students to construct a picture, pictograph, or symbolic representation of the term.*

On Wednesdays, the teacher asked students to add a picture or a symbol to each word on their word cards to help them remember what the word means. The teacher checked for understanding by giving word meaning clues and having students hold the correct word cards up, just under their chins. Students then chose nine, twelve, or sixteen of their cards, depending on the weekly number of words, and placed them face up on their desks. The teacher gave engaging word clues in the form of actions, brief phrases,

or cloze sentences. Students turned over the correct word and played various versions of BINGO games.

*Step 4*

*Engage students periodically in activities that help them add to their knowledge of the terms in their vocabulary notebooks.*

On Thursdays, the researcher used the Gradual Release Model of Instruction while students completed concept maps, graphic organizers, and word meaning sorts in small groups. Samples will be included in the appendix. The researcher collected all student work, throughout the study.

*Step 5*

*Periodically ask students to discuss the terms with one another.*

On Fridays, the researcher used informal observations to assess progress and provided additional assistance to individuals and/or a small group of students. Further discussions of the terms and how they relate to the students' real world experiences ensued. Other students reread the weekly story in order to deepen comprehension and enhance fluency. This unison read occurred in small groups with discussions of vocabulary words as they were encountered.

A brief vocabulary quiz included the words of the week and previous words with which students demonstrated difficulty. Word meaning clues or cloze sentences were given. Students simply wrote the correct word. The researcher collected all quizzes, throughout the study.

*Step 6*

*Involve students periodically in games that enable them to play with terms.*

The researcher encouraged students to earn points, for the team they were randomly placed upon each week. Points were earned by mentioning a vocabulary word and demonstrating it's meaning, in passing the researcher in the hallways and cafeteria. Previously noted BINGO games were played on Wednesdays of each week.

Steps one through five were delivered each week, in the order outlined. During shortened weeks, when students were not present Monday through Friday, steps one through five were condensed and abbreviated. As previously noted, Step 6 occurred throughout the study.

All sentence writing samples were collected throughout the study and a Sentence Complexity Assessment was administered at the end of the study. Pretest and posttest results of the Vocabulary Words Assessment and Rigby Reading A-Z Fluency Assessment, administered and scored by the researcher, were collected.

Participants' data was coded and participants' names were not attached. Permission from the school district's research personnel was obtained. Only the researcher had access to any individual identifying information. No written descriptive information related to this study included identifying information. All students' work samples were destroyed after data was recorded.

### **Instruments**

The effectiveness of direct instruction of vocabulary can be assessed in many ways (Beck, et. al., 2002). It probably takes a couple of years of intentional vocabulary work to show the impact it has on standardized reading measures, because of the sampling of words from a broad domain (Beck, 2005). In review of the literature,

researchers use a wide variety of instruments, other than standardized measures, to assess vocabulary learning.

In addition, the National Reading Panel (2000) states that few researchers have depended on standardized instruments to assess the effects of the instruction they had implemented. This suggests that the more closely the assessment matches the instruction, the more appropriate conclusions about its effectiveness will be.

A common sense conclusion is that researcher-developed assessments, closely matching the instruction, can result in appropriately informed conclusions. Using more than one measure of vocabulary is essential (National Reading Panel, 2000); therefore, three measures were used in this study. Each is readily available to practitioners. Standardized measures were not used.

#### *Vocabulary Words Assessment*

The Vocabulary Words Assessment is a researcher-created test designed to determine students' pre and post knowledge of vocabulary word meanings. The words included vocabulary lists related to each story in the research district's reading resource, Harcourt StoryTown, in the fourth quarter of fourth grade. The number of words depended upon the stories the teacher planned to include in fourth quarter instruction. The same words were assessed, pre and post, with words arranged in a different order for post testing. The same process was utilized, pre and post, with an option to administer it in two sessions to control for individual differences in attention spans.

Prior to beginning the assessment, the researcher used familiar words and provided sufficient practices to ensure students understood the Vocabulary Words Assessment process. To control for individual differences in decoding, the researcher

read each word to the student, and repeated the word a second time on request. This ensured word meanings, not decoding abilities, were measured. After a ten-second wait time, students either gave an explanation of the word that demonstrated they knew its meaning or passed on the word. The percentage of word meanings students explained correctly were recorded.

#### *Rigby Reading A-Z Fluency Assessment*

The research district provides access to Reading A-Z online resources. The researcher accessed the Reading A-Z Fluency Assessments, Form 1, Form 2, and Form 3, online. Form 1 included 16 sentences. Forms 2 and 3 included 18 sentences each. All forms were one-minute timed tests of the number of sentences students read, along with a comprehension component, the number of sentences students answered, either yes or no, correctly. (Reading A-Z, 2012).

Students were encouraged to use individual strategies that helped them perform to the best of their abilities on each form. Some tracked the text as they read while others slid bookmarks under each sentence while reading. The researcher encouraged students to relax and do their best on each one-minute read. The silent timer was kept out of sight as students completed each of the three forms. The researcher assessed all students' pre and post fluency levels by calculating the total percent correct on each of the three forms, then determining the total pre and post averages for each student.

#### *Sentence Complexity Assessment*

Students wrote sentences to demonstrate meanings of vocabulary words throughout the nine-week study. They were encouraged to relate their sentences to prior knowledge and real world experiences. Instruction included explanations and

demonstrations of how additional words and phrases can demonstrate knowledge of word meanings, thus increasing sentence complexity. Each fourth grade student's week one sentence and week nine sentence were collected and scored for sentence complexity using the Flesch Reading Ease measure.

Microsoft Word's Flesch Reading Ease score is based on a formula developed in 1949 by Rudolf Flesch. By using the average number of syllables per word, a measure of word difficulty, and the average number of words per sentence, a measure of syntactic complexity, the ease of reading is calculated. Scores range from zero to 100. Zero to 40 is considered very difficult to difficult reading. Eighty and above is considered easy to very easy (Stockmeyer, 2009).

### **Data Analysis**

Data was analyzed using SPSS software. Raw scores were converted to scale scores and the multi-factor ANOVA analysis was utilized. By comparing the two groups in this study using "t" tests for independent samples, we may have arrived at the same conclusions, but the multi-factor ANOVA was a more flexible and powerful technique, applicable to more complex research. Single variables rarely explain phenomenon (StatSoft, 2012).

In a typical experiment, many factors are taken into account. An ANOVA can test each factor while controlling for all others, using fewer observations to find a significant effect than with multiple *t* tests. In other words, an important reason for using ANOVA methods rather than multiple two-group studies analyzed via *t* tests is that the former method is more efficient. Fewer observations gain more information (StatSoft, 2012).

In this study, the dependent variable was student achievement as measured by three instruments, Vocabulary Words Assessment, Rigby Reading A-Z Fluency Assessment, and Sentence Complexity Assessment. Independent variables included Group 1, students predicted to score below state reading standards, and Group 2, students predicted to meet or exceed state reading standards. Both groups received direct instruction of vocabulary using Marzano's Six Step Vocabulary Process, 15-20 minutes per day, for nine weeks.

Review of multi-factor ANOVA analyses determined whether or not there was a statistically significance difference in achievement, between groups, in each of the three dependent measures, Vocabulary Words Assessment, Rigby Reading A-Z Fluency Assessment, and Sentence Complexity Assessment. Results have the potential of informing instructional decisions, not only in the fourth quarter of fourth grade, but for all grade levels throughout the school year.

## Chapter 4

### Results

Jeanne Chall (1983, 1996) identifies the need for direct instruction in word meanings as especially effective for readers who are struggling at grade four and above. In addition, Marzano's (2009) research indicates significant progress when his Six Step Vocabulary Process for direct instruction is implemented. Therefore, a focus on daily, direct instruction of vocabulary and how it will help counter Fourth Grade Slump was the foundation of this study.

The purpose of this study was to explore the relationship between the direct instruction of vocabulary in the fourth quarter of fourth grade, using Marzano's (2009) Six Step Vocabulary Process, and the effects on student achievement as measured by Vocabulary Words Assessments, Rigby Reading A-Z Fluency Assessments, and Sentence Complexity Assessments. The researcher explored the impact of the short term emergency, direct instruction vocabulary intervention on two groups of students, those predicted to score below state reading standards (Group 1) and those predicted to meet or exceed state reading standards (Group 2), in order to inform decisions about future vocabulary instruction.

#### Research Question #1

Was there a statistically significant difference in vocabulary scores as measured by the Vocabulary Words Assessment from pretest to posttest between fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards)?

**Vocabulary Words Assessment.** There was a statistically significant main effect for time (pretest/posttest),  $F(1,19) = 203.18, p < .01, \eta^2 = 0.91$ . There was a statistically



significant interaction between time and group,  $F(1, 19) = 10.05, p = .01, \eta^2 = 0.35$ .

There was a statistically significant main effect for group,  $F(1, 19) = 557.40, p < .01, \eta^2 = 0.97$ .

The statistically significant main effect for time indicated that fourth grade students' scores increased significantly from the pretest ( $M = 29.67, SD = 14.62$ ) to posttest ( $M = 53.19, SD = 8.44$ ) regardless of the group. The significant main effect for group indicated that students expected to meet or exceed state standards ( $M=58.40, SD=6.80$ ) scored significantly higher than those not expected to meet or exceed state standards ( $M 48.45, SD 7.01$ ). The means and standard deviations of the Vocabulary Words Assessment scores are displayed in Table 1. The ANOVA for the Vocabulary Words Assessment is displayed in Table 2.

### **Research Question #2**

Was there a statistically significant difference in fluency scores, as measured by Rigby Reading A-Z Fluency Assessments, from pretest to posttest between fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards)?

**Rigby Reading A-Z Fluency Assessments.** There was a statistically significant main effect for time (pretest/posttest),  $F(1,19) = 42.86, p < .01, \eta^2 = 0.69$ . There was a statistically significant main effect for group,  $F(1, 19) = 4659.07, p < .01, \eta^2 = 1.00$ . There was no statistically significant interaction between time and group,  $F(1, 19) = 0.82, p = .38, \eta^2 = 0.04$ .

The statistically significant main effect for time indicated that fourth grade students' scores increased significantly from pretest ( $M = 85.71, SD = 9.16$ ) to posttest

( $M = 93.15$ ,  $SD = 5.53$ ), regardless of the group. The significant main effect for group indicated that students expected to meet or exceed state standards ( $M = 96.75$ ,  $SD = 2.73$ ) scored significantly higher posttest than those not expected to meet or exceed state standards ( $M = 89.87$ ,  $SD = 5.46$ ). The means and standard deviations of the Rigby Reading A-Z Fluency Assessment scores are displayed in Table 3. The ANOVA for the Rigby Reading A-Z Fluency Assessment is displayed in Table 4.

### **Research Question #3**

Was there a statistically significant difference in sentence writing scores as measured by the Sentence Complexity Assessment from pretest to posttest between fourth graders in Group 1 (students predicted to score below state reading standards) and fourth graders in Group 2 (students predicted to meet or exceed state reading standards)?

**Sentence Complexity Assessment.** There was no statistically significant main effect for time (pretest/posttest),  $F(1,19) = 2.80$ ,  $p = .11$ ,  $\eta^2 = 0.13$ . There was no statistically significant interaction between time and group,  $F(1, 19) = 2.91$ ,  $p = .10$ ,  $\eta^2 = 0.13$ . There was a statistically significant main effect for group,  $F(1, 19) = 1303.81$ ,  $p < .01$ ,  $\eta^2 = 0.99$ .

The significant main effect for group indicated that students expected to meet or exceed state standards ( $M = 73.25$ ,  $SD = 11.26$ ) scored significantly better, both pre and post, than those not expected to meet or exceed state standards ( $M = 88.51$ ,  $SD = 12.07$ ). The means and standard deviations of the Sentence Complexity Assessment scores are displayed in Table 5. The ANOVA for the Sentence Complexity Assessment is displayed in Table 6.

Table 1

## Descriptive Statistics for Vocabulary Words Assessment Scores

	Pretest		Posttest	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Group 1	20.00	4.38	48.45	7.01
Group 2	40.30	14.63	58.40	6.80
Total	29.67	14.62	53.19	8.44

Table 2

## ANOVA for Vocabulary Words Assessment Scores

Source of Variation	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between Subjects					
Group	1	73177.87	557.40	<.01	.97
Error	19	131.29			
Within Subjects					
Time	1	5676.33	203.18	<.01	.91
Interaction	1	280.81	10.05	.01	.35
Error	19	27.94			

Table 3

## Descriptive Statistics for Rigby Reading A-Z Fluency Assessments Scores

	Pretest		Posttest	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Group 1	81.46	9.78	89.87	5.46
Group 2	90.38	5.82	96.75	2.73
Total	85.71	9.16	93.15	5.53

Table 4

## ANOVA for Rigby Reading A-Z Fluency Assessments Scores

Source of Variation	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between Subjects					
Group	1	336542.73	4659.07	<.01	1.00
Error	19	72.23			
Within Subjects					
Time	1	572.06	42.86	<.01	.69
Interaction	1	10.89	0.82	.38	.04
Error	19	13.35			

Table 5

## Descriptive Statistics for Sentence Complexity Assessments Scores

	Pretest		Posttest	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Group 1	88.38	17.49	88.51	12.07
Group 2	85.88	12.63	73.25	11.26
Total	87.19	15.04	81.24	13.82

Table 6

## ANOVA for Sentence Complexity Assessments Scores

Source of Variation	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between Subjects					
Group	1	295716.80	1303.81	<.01	0.99
Error	19	226.81			
Within Subjects					
Time	1	409.41	2.80	.11	0.13
Interaction	1	426.25	2.91	.10	0.13
Error	19	146.35			

## Chapter 5

### Discussion and Summary

Vocabulary knowledge is required in order to achieve the ultimate reading goal, comprehension. Children enter school with significant differences in vocabulary knowledge. Those from higher economic backgrounds have generally heard thousands more words before entering Preschool than those from low economic backgrounds (Hart & Risley, 1995). These differences grow larger in the early grades (Biemiller & Slonim, 2001). Whether using results of the National Assessment of Education Progress, local standardized testing, or informal classroom assessment, this achievement gap becomes more evident by fourth grade and increases as children get older (Sanacore & Palumbo, 2009).

In order to close that gap, Michael Graves (2006) states that students with limited vocabulary must catch up at an accelerated rate in order to be on the same academic level as their peers. He advocates that a program to address this need must be designed to be ongoing and have the flexibility to meet the needs of all learners. Graves estimates three years as a reasonable estimation of time for first graders to catch up, while older students in the same predicament may need more time. Building students' vocabulary knowledge is critical!

Because of this critical need, identifying the most effective vocabulary strategy is of paramount importance. As a means to that end, the findings of this study are enlightening. Findings suggest that the implementation of Marzano's Six Step Vocabulary Process has the potential of moving students from low to high levels of vocabulary knowledge in nine weeks. If practitioners who use Marzano's Six Step

Vocabulary Process with fidelity can increase vocabulary knowledge at this rate, the implications for students achieving to their highest potential and meeting or exceeding state standards are more than promising.

### **Discussion of Results**

**Vocabulary Knowledge.** Both groups of students who received direct instruction using Marzano's Six Step Vocabulary Process made significant growth in vocabulary knowledge from pretest ( $M = 29.67$ ,  $SD = 14.62$ ) to posttest ( $M = 53.19$ ,  $SD = 8.44$ ). Group 2, students predicted to meet or exceed state standards in reading, made significant growth in vocabulary knowledge from pretest ( $M = 40.30$ ,  $SD = 14.62$ ) to posttest ( $M = 58.40$ ,  $SD = 6.80$ ). Remarkably, Group 1, students predicted to fall below state standards, made significant growth in vocabulary knowledge from pretest ( $M = 20.00$ ,  $SD = 4.38$ ) to posttest ( $M = 48.45$ ,  $SD = 7.01$ ), as well. In fact, the post-study vocabulary knowledge of students in Group 1 was comparable to the pre-study level of students in Group 2.

The researcher believes that the significant growth Group 1 made in vocabulary knowledge is the most revealing discovery of this exploratory study. Based on Acuity predictive scores, students in Group 2 were expected to meet or exceed state standards in reading at the beginning of the study. Given the vocabulary intervention, these Group 2 students made significant progress, solidifying their vocabulary knowledge and predicted high performance on state standards. Comparably, given the intervention, students in Group 1 progressed from predicted failure on state standards to ranges within the possibilities of meeting or exceeding state standards. This is profound! Considering the ANOVA effect size for time (.914) and group (.967), it is reasonable to assume that using

Marzano's Six Step Vocabulary Process can result in a 32-33 percentile gain in student achievement. Consider the possibilities for closing the achievement gap between high and low achieving students on state standards in reading.

**Rigby Reading A-Z Fluency.** Five components are critical to the ultimate goal of reading, gaining a deep understanding of the author's message. According to the National Reading Panel's Report (2000), reading success is dependent upon: (1) phonemic awareness, (2) phonics, (3) vocabulary, (4) fluency, and (5) comprehension. Readers best understand the author's message when success has been achieved in all five components. The fluency results in this study suggest that Marzano's Six Step Vocabulary Process promotes achievement in more than one of the five components of reading.

Both groups of students who received direct instruction using Marzano's Six Step Vocabulary Process made significant growth in fluency levels from pretest ( $M = 85.71$ ,  $SD = 9.16$ ) to posttest ( $M = 93.15$ ,  $SD = 5.53$ ). Group 2, students predicted to meet or exceed state standards in reading, made significant growth in fluency from pretest ( $M = 90.38$ ,  $SD = 5.82$ ) to posttest ( $M = 96.75$ ,  $SD = 2.73$ ). Group 1, students predicted to fall below state standards, made significant growth in fluency from pretest ( $M = 81.46$ ,  $SD = 9.78$ ) to posttest ( $M = 89.87$ ,  $SD = 5.46$ ), as well.

While focusing on vocabulary using Marzano's Six Step Vocabulary Process, fluency scores increased? Considering the ANOVA effect size for time, .693, it is reasonable to assume that using Marzano's Six Step Vocabulary Process can be instrumental in raising fluency scores.



**Sentence Complexity.** The ability to put vocabulary words into context by writing sentences that convey meaning is the foundation of writing. The complexity with which these sentences are written increases as students progress to higher levels of competency. More complex sentences typically include more words and details, which enhance the reader's comprehension. Students who can successfully string meaningful, complex sentences together, in an organized manner, enjoy writing success.

Students in Group 2, those predicted to meet or exceed state standards in reading, scored significantly better (lower) in sentence complexity at posttest ( $M = 73.25$ ,  $SD = 11.26$ ) than Group 1 students, those predicted to fall below state standards in reading ( $M = 88.51$ ,  $SD = 12.07$ ). Considering the ANOVA effect size of .986, it is reasonable to assume that using Marzano's Six Step Vocabulary Process can positively impact sentence writing skills in students already expected to meet or exceed state standards in reading, Group 2 students.

It is important to note that, although the sentences students in Group 1 produced were not high in complexity, they did reflect comprehension of the vocabulary words. For example, the sentence "I plunge over in night" progressed to "I will plunge into the water." Sentence complexity scores indicate little variation between the two sentences, but the second sentence clearly demonstrates the correct meaning of the word plunge. The illustration on the back of the student's sentence card demonstrated a clear understanding of the word plunge, as well.

Sentence: I will plunge into the water.

Illustration: boy on diving board with blue water below

Students in Group 2 demonstrated knowledge of most all vocabulary words, while increasing sentence complexity levels, as well. While both groups of students were encouraged to add more words, details, adjectives, and meaning to their sentences, many students in Group 1 worked on simple sentences that conveyed correct meanings. Students in Group 2, who were expected to meet or exceed state standards in reading, expanded their sentences throughout the nine weeks to a high level of complexity . . . meaning. The illustration on the back of one student's sentence card demonstrated a clear and more detailed understanding of the word plunge. The number of words, nouns, verbs, and adjectives in the sentence increased the sentence complexity score.

Sentence: My plan is to plunge into the deep water and find the track medal I lost.

Illustration: boy on rocky edge of deep water with shiny medal at bottom

Students in Group 2 challenged themselves and progressively wrote more complex sentences throughout the nine-week intervention.

### **Importance of Study**

Beck and McKeown (2007) found that a large, rich, strong vocabulary is related to reading proficiency. Students' vocabularies play important roles in their lives and their possibilities far into their futures. Some students begin their formal schooling with a command of far fewer vocabulary words than their peers. Many of these students, especially those from low socio-economic families, never catch up to their peers. Hart and Risley (2003) referred to this disparity as The 30 Million Word Gap.

This study suggests a strategy, Marzano's Six Step Vocabulary Process, that begins to build vocabulary knowledge, along with fluency and sentence complexity, at a significantly fast rate, nine weeks. Collective effect sizes of .967, .914, .346 .996, .693,

and .986 in this study reflect an expected percentile gain of from 13% to 34%. These are significant and promising data.

Comprehension is the reason for reading, and vocabulary plays a significant role in comprehension (National Institute of Child Health and Human Development, 2000). Kieffer & Lesaux (2007, p.134, cited by Rupley, et al., 1998/1999) found that academic vocabulary is a most critical need when assisting students in meeting and exceeding state standards. The results of this study identify the use of Marzano's Six Step Vocabulary Process as a means of preparing students to be successful on state standards in reading. The importance of vocabulary in reading achievement has been recognized for more than half a century (National Reading Panel Report, 2000). Building vocabulary truly is the key!

Beck and McKeown (2007) state that schools are not doing much with vocabulary. They go as far as to say almost no emphasis is placed on vocabulary acquisition in the current curriculum. Hopefully, the results of this and many other studies, where Marzano's Six Step Vocabulary Process is implemented, will convince practitioners to place the necessary emphasis where it belongs. The reason . . . to raise student achievement.

Results of studies related to the direct instruction of vocabulary are encouraging, but the element of time continues to be a challenge in schools today. Although multiple studies have demonstrated statistically significant gains, the time necessary to effectively employ direct instruction of vocabulary often impedes action. "Improving the vocabulary knowledge of our lowest achieving readers can only be accomplished through direct and explicit instruction of word meanings" (Longo & Curtis, 2008 p. 23). This takes time!

The 15-20 minute direct, explicit instructional approach in this study promotes time on task. Rupley, Blair, and Nichols (2009) state that the use of the direct, explicit approach facilitates active student engagement. Classrooms in which students are actively engaged in learning for a large proportion of the time demonstrate higher achievement in reading and writing (Rupley, Blair & Nichols, 2009). By using Marzano's direct, explicit instructional approach in this study, all-student engagement was achieved and instructional time was maximized.

Chall (1990) confirmed that declining comprehension scores in the later elementary years were found in children with restricted vocabulary by third grade. In addition, Biemiller & Boote (2006) found that around fourth grade, many children experience a slump in reading comprehension, establishing the Fourth Grade Slump phenomenon and the importance of vocabulary knowledge to comprehension. The results of this study indicate the fourth grade students made significant progress in just nine weeks of the fourth quarter of the school year, beginning to counter the Fourth Grade Slump.

This significant progress helped prepare students for the effects of Summer Learning Loss. The realities of Summer Learning Loss compound learning issues related to the Fourth Grade Slump phenomenon. Alexander, Entwisle, and Olson (2007) define Summer Learning Loss as the "educational deficiency students experience from the long summer vacations which break the rhythm of instruction, lead to forgetting, and require a significant amount of review when students return to school in the fall" (Alexander, et al., 2007, p.167).

The Summer Learning Loss that occurs as a result of long summer vacations, away from academics, compounds existing vocabulary challenges that first lead to Fourth Grade Slump (Chall, 1983). Without sufficient vocabulary knowledge, the ultimate goal of reading, gaining a deep understanding of the author's message, is non-attainable. Comprehension of text declines. This study suggests a clear solution, implementation of Marzano's Six Step Vocabulary Process.

### **Recommendations for Further Research**

This exploratory study, beginning with 23 subjects, suggests that Marzano's Six Step Vocabulary Process has the potential of raising students' vocabulary, fluency, and sentence complexity performance levels in nine weeks. Even though these data are promising, further research is recommended.

Research using content area, academic vocabulary, as opposed to story vocabulary from the district reading series, is recommended. It is likely that achievement results in reading, math, and science would skyrocket, especially if the study spanned an entire school year or more.

Furthermore, research that begins in the first quarter of the school year, as opposed to this emergency study beginning fourth quarter, is encouraged. Much of the research referenced in this study reflects more lengthy studies, as well as meta-analyses including more lengthy studies. Securing a larger number of subjects is encouraged, as well.

In this study, measures of vocabulary knowledge began as the focus. Fluency and sentence complexity measures were completed in order to place students in flexible groups, as practitioners might typically do. Surprisingly, it was discovered that most

students' fluency and sentence complexity levels increased significantly. Further recommendations for studies measuring the effects of Marzano's Six Step Vocabulary Process, on all five components of reading, Phonemic Awareness, Phonics, Vocabulary, Comprehension, and Fluency, are recommended.

Finally, the direct instruction model delivered in this study may be most beneficial to students expected to fall below state reading standards. Is it possible for students expected to meet or exceed standards to benefit more from indirect vocabulary acquisition, wide reading? A two year study exploring this possibility may result in notable findings.

### **Summary**

This exploratory study examined the ways in which fourth grade students, in an urban setting, responded to a nine-week implementation of Marzano's Six Step Vocabulary Process. The purpose of this study was to explore the relationship between the direct instruction of vocabulary and the effects on student achievement as measured by Vocabulary Words Assessments, Rigby Reading A-Z Fluency Assessments, and Sentence Complexity Assessments.

Results suggest that implementation of Marzano's Six Step Vocabulary Process has the potential of significantly raising student achievement. Based on this study and the results of numerous other studies where Marzano's Six Step Vocabulary Process was implemented with fidelity, effect sizes are impressive (Haystead & Marzano, 2009). Both groups of students in this study, those expected to fall below state reading standards and those expected to meet or exceed standards, demonstrated significant growth in vocabulary knowledge. Fluency growth in both groups was significant. Growth in

sentence complexity was statistically significant for those expected to meet or exceed standards only. Sentence complexity statistics reflected little to no growth in students expected to fall below standards. Their sentences demonstrated vocabulary word knowledge, but were not necessarily complex.

The large urban school district where this study took place recently identified Marzano's Six Step Vocabulary Process as its number one literacy strategy. School improvement plans include this strategy across the entire school district. Professional development is being provided and leadership teams are ensuring Marzano's Six Steps are in lesson plans and implemented in the classrooms. Teams are also coaching in classrooms, complimenting sound implementation and assisting/modeling, as needed. Leadership teams from several schools are meeting to coach together, as well.

District leadership teams continue to collaborate with building leadership teams to promote the implementation of Marzano's Six Step Vocabulary Process, while the second literacy strategy is introduced, Think Aloud. Keeping the focus on Marzano's Six Steps, throughout the school year, has the potential of significantly raising student achievement. Expectations for students meeting and exceeding state reading standards are high. Predictive Acuity scores are rising. State testing results in this large urban school district will be highly anticipated!

## References

- Alexander, K., Entwisle, D., & Steffel Olson, L. (2007). Lasting consequences of the summer learning gap. *American Sociological Review*, 72(4), 167-180.
- Allington, R., & Cunningham, P. (2007). *Schools that work: where all children read and write*. Boston, MA: Allyn and Bacon. Pearson Education Inc.
- Baumann, J. F., & Duffy, A. M. (1997). Engaged reading for pleasure and learning: A report from the national reading research center. Athens, GA: National Reading Research Center.
- Beck, I.L., & McKeown, M.G. (1991). Conditions of vocabulary acquisition. *Handbook of Reading Research*, 2, 789–814. White Plains, NY: Longman.
- Beck, I. & McKeown, M. (2007). Increasing young low-income children's oral vocabulary repertoires through rich and focused instruction. *Elementary School Journal*, 107(3), 251-271.
- Beck, I. L., McKeown, M. G. & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction*. New York: Guilford Press.
- Biemiller, A., & Boote, C. (2006). An effective method for building vocabulary in primary grades. *Journal of Educational Psychology*, 98(1), 44-62.
- Biemiller, A., & Slonim, N. (2001). Estimating root word vocabulary growth in normative and advantaged populations: Evidence for a common sequence of vocabulary acquisition. *Journal of Educational Psychology*, 93(3), 498-520.
- Blachowicz, C.L.Z., & Fisher, P.J.L. (2000). Vocabulary instruction. *Handbook of Reading Research*, 3, 503–523. Mahwah, NJ: Erlbaum.
- Borman, G., & Boulay, M. (2004). *How families, children, and teachers contribute to*



*summer learning and loss*. Retrieved from <http://psycnet.apa.org/psycinfo/2004-14911-011>.

- Boulware-Gooden, R., Carreker, S., Thornhill, A., & Joshi, R.M. (2007). Instruction of metacognitive strategies enhances reading comprehension and vocabulary achievement of third-grade students. *The Reading Teacher, 61*(1), 70-77.
- Carlo, M., August, D., McLaughlin, B., Snow, C., Dressler, C., Lippman, D., Lively, T., & White, C. (2004). Closing the gap: Addressing the vocabulary needs of English language learners in bilingual and mainstream classrooms. *Reading Research Quarterly, 39*(2), 188–215.
- Chall, J. (1983). *Stages of reading development*. New York: McGraw-Hill.
- Chall, J. S. (1996). *Stages of reading development (2nd ed.)*. Fort Worth, TX: Harcourt Brace.
- Chall, J. S., & Jacobs, V. A. (2003). Poor Children's Fourth-Grade Slump. *American Educator*. Retrieved from <http://www.colorincolorado.org/article/13995/>.
- Chall, J. S., Jacobs, V. A., & Baldwin, L. E. (1990). *The reading crisis: Why poor children fall behind*. Cambridge, MA: Harvard University Press.
- Chard, D., & Kameenui, E. (2000). Struggling first-grade readers: The frequency and progress of their reading. *Journal of Special Education, 34*(1), 28-38.
- Cooper, H. (2003). Summer Learning Loss: The Problem and Some Solutions. Retrieved from <http://ceep.crc.uiuc.edu/ecearchive/digests/2003/cooper03.html>.
- Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. *Review of Educational Research, 66*, 227-268.
- Cooper, G., & Sweller, J. (1987). Effects of schema acquisition and rule automation on

- mathematical problem-solving transfer. *Journal of Educational Psychology*, 79(4), 347-362.
- Coyne, M., McCoach D., Loftus, S., Zipoli, R., & Kapp, S. (2009). Direct vocabulary instruction in kindergarten: Teaching for breadth versus depth. *The Elementary School Journal*, 110(1), 1-18.
- CTB/McGraw-Hill (2012). Acuity Overview. Retrieved from <http://www.ctb.com/ctb.com/control/productFamilyViewAction?productFamilyId=444&p=products>.
- Elley, W. B. (1989). Vocabulary acquisition from listening to stories. *Reading Research Quarterly*, 24(2), 174-187.
- Frey, N., & Fisher, D. (2007). *Reading for information in elementary school: Content literacy strategies to build comprehension*. New Jersey, NY: Pearson Education, Inc.
- Gabrieli, C. (2011/2012). Time: It's not always money. *Educational Leadership*, 69/4, 24-29, 88-9.
- Graves, M.F. (2006). *Teaching word-learning strategies*. New York: Newark, DE & Urbana, IL: Teachers College Press.
- Hall, K. M., & Sabey, B. L. (2007). Focus on the facts: How to use informational texts effectively in early elementary classrooms. *Early Childhood Education Journal*, 35(3), 261-268.
- Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experiences of young american children*. Baltimore, MD: Brookes Publishing Company.
- Hart, B., & Risley, T. (2003). The early catastrophe. *American Educator*, 27(1), 4-10.
- Haystead, M.W., & Marzano, R.J. (2009). *Meta-analytic synthesis of studies*

*conducted at Marzano Research Laboratory on instructional strategies.*

Englewood, CO: Marzano Research Laboratory.

- Hirsch, E. D., Jr. (2003). Reading comprehension requires knowledge of words and the world: Scientific insights into the fourth-grade slump and the nation's stagnant comprehension scores. *American Educator*, 27, 10–29.
- Huebner, T. (2009). Small-group intervention for ELLs. *Educational Leadership*, 66(7), 90-91.
- Jenkin, J.R., Stein, M.L., & Wysocki, K. (1984). Learning vocabulary through reading. *American Educational Research Journal*, 21, 767–787.
- Kalyuga, S., Chandler, P., Tuovinen, J., & Sweller, J. (2001). When problem solving is superior to studying worked examples. *Journal of Educational Psychology*, 93, 579-588.
- Longo, A.M., & Curtis, M.E. (2008). Improving the vocabulary knowledge of struggling readers. *The NERA Journal*, 44(1), 23-28.
- Marzano, R. J. (2003). *What works in schools: Translating research into action*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Marzano, R.J. (2004). *Building background knowledge for academic achievement: Research on what works in schools*. Alexandria, VA: ASCD.
- Marzano, R.J. (2007). *The art and science of teaching: A comprehensive framework for effective instruction*. Alexandria, VA: ASCD.
- Marzano, R.J. (2009). Six steps to better vocabulary instruction. *Teaching for the 21<sup>st</sup> Century*, 67(1), 83-84.
- Marzano, R.J. (2011/2012). It's how you use a strategy. *Educational Leadership*, 69(4), 88-89.

- Mathes, P. G., Denton, C. A., Fletcher, J. M., Anthony, J. L., Francis, D. J., & Schatschneider, C. (2005). The effects of theoretically different instruction and student characteristics on the skills of struggling readers. *Research Reading Quarterly, 40*, 148-182.
- National Institute of Child Health and Human Development. (2000). Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction (NIH Publication No. 00-4769). Washington, DC: U.S. Government Printing Office.
- National Reading Panel (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. NIH Publication No. 00-4754. Washington, DC: National Institute of Child Health and Human Development.
- Nuthall, G. (1999). The way students learn: Acquiring knowledge from an integrated science and social studies unit. *The Elementary School Journal, 99*(4), 303-341.
- Rasinski, T.V., & Padak, N.D. (2004). *Effective reading strategies: Teaching children who find reading difficult (3rd ed.)*. Columbus, OH: Merrill/Prentice Hall.
- Richek, M. (2005). Words are wonderful: Interactive, time-efficient strategies to teach meaningful vocabulary. *The Reading Teacher, 58*(5), 414-423.
- Reading A-Z Fluency Overview. Retrieved from <http://www.readinga-z.com/fluency/index.html>.
- Rosenshine, B. (2002). Helping students from low-income homes read at grade level. *Journal of Education for Students Placed At Risk, 7*, 273–283.
- Roswell, F., & Chall, J. (1992). *Diagnostic assessments of reading and trial teaching strategies (DARTTS)*. Chicago: Riverside.

- Rovee-Collier, C. (1995). Time windows in cognitive development. *Developmental Psychology*, 31(2), 147-169.
- Rupley, W.H. (2009). Introduction to direct/explicit instruction in reading for the struggling reader: phonemic awareness, phonics, fluency, vocabulary, and comprehension. *Reading and Writing Quarterly*, 25, 119-124.
- Rupley, W.H., Blair, T.R., & Nichols, W.D. (2009). Effective reading instruction for struggling readers: the role of direct/explicit teaching. *Reading & Writing Quarterly*, 25, 125-138.
- Rupley, W. H., Logan, J. W. & Nichols, W. D. (1998/1999). Vocabulary instruction in a balanced reading program. *The Reading Teacher*, 52, 336-346.
- Sanacore, J. & Palumbo, A. (2009). Understanding the fourth-grade slump: Our point of view. *The Educational Forum*, 73, 67-74.
- Smink, J. (2011). This is your brain on summer. Retrieved from [http://www.nytimes.com/2011/07/28/opinion/28smink.html?\\_r](http://www.nytimes.com/2011/07/28/opinion/28smink.html?_r).
- Smith, C. (1997). Vocabulary instruction and reading comprehension. Eric Digest, Article ED412506. from <http://www.vtaide.com/png/ERIC/VocabComprehension.htm>.
- Snow, C. E., Burns, M. S., & Griffin, P. (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Sonbul, S. & Schmitt, N. (2010). Direct teaching of vocabulary after reading: Is it worth the effort? *English Language Teachers Journal*, 64(3), 253-260.
- Stahl, S. (2003). Fluency: A review of developmental and remedial practices. *Journal of Educational Psychology*, 95(1), 3-22.
- Stahl, A. & Fairbanks, M. (1986). The effects of vocabulary instruction: A model-based

- meta-analysis. *Review of Educational Research*, 56, 72-110.
- Stanovich, K. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 21(4), 360–407.
- StatSoft Electronic Statistics Textbook. (n.d.). ANOVA/MANOVA. Retrieved from <http://www.statsoft.com/textbook/anova-manova/?button=1>
- Stockard, J. (2010). Promoting reading achievement and countering the "fourth-grade slump:” The impact of direct instruction on reading achievement in fifth grade. *Journal of Education for Students Placed at Risk*, 15(3) 218–240.
- Stockmeyer, N.O. (2009). Using microsoft word’s readability program. *Michigan Bar Journal*, 1, 46-46.
- Stowe, H.B. (n.d.). Uncle Tom’s Cabin. Retrieved from <http://www.harrietbeecherstowecenter.org/utc/>
- Tadlock, D., & Stone, R. (2005). *Read right: Coaching your child to excellence in reading*. New York, NY: McGraw-Hill.
- Taylor, D. B., Mraz, M., & Nichols, W. D. (2009). Using explicit instruction to promote vocabulary learning for struggling readers. *Reading and Writing Quarterly*, 25, (2-3), 205-220.
- Van Der Stuyf, R. (2002). Scaffolding as a teaching strategy. *Adolescent Learning and Development*, Section 0500A, November 17, 2002.
- Willingham, D. & Daniel, D. (2012). Teaching to what students have in common. *Educational Leadership*, 69(5), 16-21.