Effect of Focused Vocabulary Instruction on 7th Graders' Reading Comprehension

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Abstract

This study reports an investigation on the effects of directed vocabulary and whole class instruction on improving students' vocabulary acquisition and reading comprehension. Fifty-eight seventh grade students participated in the study, and a pre-test/post-test experimental design was employed. The results did not indicate any statistically significant differences between the control and experimental group in reading comprehension or vocabulary acquisition. However, considerable differences were found in favor of the experimental group in reading comprehension.

Introduction

The No Child Left Behind Act of 2002 has prioritized for all school systems and the teachers therein to meet required, rigorous standards of education. It has also resulted in monitoring accountability through the use of high stakes tests to measure success. Many teachers and student advocates have lamented that more emphasis has been placed on teaching the skills and tools required to pass the test instead of teaching for learning. Teachers who previously would not "teach to the test" have found they have little choice in this climate of high-stakes accountability. School districts are focused on test scores and students, parents, and teachers are very aware of the consequences of their school not meeting Annual Yearly Progress (AYP). From the beginning of the school year, the focus on test-prep skills and test taking strategies is prevalent. In that light, reading comprehension becomes a critical skill.

In order to understand and remember content material and to be able to analyze test questions and identify the correct answers, students must be able to comprehend the textbooks they are using and the tests they are required to take. Vocabulary knowledge plays a critical role in people's lives and future possibilities (Beck, McKeown, & Kucan, 2002). In fact, "it is clear that a large and rich vocabulary is the hallmark of an educated individual. A large vocabulary repertoire facilitates becoming an educated person to the extent that vocabulary is strongly related to reading comprehension in particular and school achievement in general" (Beck et al., p. 1). The purpose of this study is to investigate the effect of a directed or focused vocabulary instruction format within a current 7th grade literacy program to determine if the vocabulary instruction significantly improves adolescents' reading comprehension.

Literature Review

Vocabulary instruction is critical for students to develop reading comprehension. Many students may be able to decode the words they are reading, but if they cannot recognize the meaning of those words, their comprehension will be ultimately impaired.

Heilman, Blair, and Rupley (2002) stated that "enhancing the development and growth of the vocabulary of students, especially those who are experiencing difficulties, enables them to better comprehend what they read, make inferences within and between texts they read, and increase their abilities to comprehend" (p. 12). On any given day, students experience new ideas and new words in all content areas that can enhance their comprehension or hinder it if they cannot develop any understanding of the specific words encountered. As Harmon (2005) pointed out, "The language of different content areas presents an even greater challenge, as most words in these areas are low-frequency words, many of which do not appear in other contexts. Such limitations narrow the multiple exposures students need to internalize word meanings and develop word ownership." Students who engage in reading on their own time, have more exposure to a greater variety of vocabulary and, more importantly, to a greater variety of new and difficult vocabulary, which provides opportunities for more exposures to low-frequency words.

A focused vocabulary curriculum that encourages readers to develop word meaning can result in higher levels of reading comprehension. Reading comprehension is defined as "deriving meaning from text when they (the readers) engage in intentional problem solving" (National Reading Panel, 2000, p.15). In a longitudinal study

conducted by Cunningham and Stanovich (1997), it was discovered that vocabulary knowledge in first grade accounts for more that 30% of the variance in reading comprehension in eleventh grade. It seems, therefore, if students are provided a rigorous and consistent curriculum of vocabulary instruction from early elementary years through high school, most would benefit from increased comprehension of content reading.

All students can benefit from direct vocabulary instruction. A student who is reading on grade level, emerging, or struggling, as well as ESL students must be given the means to develop vocabulary. In an experimental study conducted by Gaudio (2003), upper elementary ESL students were identified as poor or non-readers on the STAR reading test. This group of students was then taught using an intense vocabulary program for a period of three months. Within this time, the students were exposed to multiple vocabulary strategies, which they practiced daily. At the conclusion of the time frame, the students were administered the STAR computer adaptive reading test for a second time. The intervention had a positive effect on the students reading scores. The overall class average increased from a grade equivalent of kindergarten – third month to a first grade - first month level.

According to McKeown and Beck (2003), "activities that encourage deep processing challenge students to move beyond memorizing simple dictionary definitions to understanding words at a richer, more complex level" (p. 154). By including focused vocabulary activities into everyday literacy instruction, students' abilities to better comprehend and infer meaning from what they read will be increased. Rupley and Nichols (2005) encourage programs that use reading and vocabulary instruction. Of the various activities they suggest, Frayer diagrams, concept analysis diagrams, semantic maps, concepts of definition organizers, and teaching relationships among words, all have produced positive results with students. However, learning new words is not sufficient to improve reading comprehension. Students must apply their understanding of these words while reading content area textbooks in order for them to gain meaning from the text. Joshi (2005) reported a study in which the widely used Drop Everything and Read (DEAR) program was modified to encourage students to only write notes to each other. Pre and Post test results on the Stanford Diagnostic Reading Test- IV demonstrated that the treatment group's vocabulary skills improved significantly compared to the control group. They used more words and wrote in longer, more complex sentences.

One of the most persistent findings in reading research is that the extent of students' vocabulary knowledge relates strongly to their reading comprehension and overall academic success (Baumann, Kame'enui, & Ash, 2003; Becker, 1977; Davis, 1942; Whipple, 1925). This makes sense, because to get meaning from what they read, students must have a vocabulary that includes many words and the ability to use various strategies to identify the meanings of new words when they come upon them. Students without large vocabularies or effective word-learning strategies often struggle to achieve comprehension. Their experiences with reading set in motion a cycle of frustration and failure that continues throughout their school years. Because these students don't have sufficient word knowledge to understand what they read, they typically avoid reading. Because they don't read very much, they don't have the opportunity to see and learn many new words. In terms of vocabulary development, good readers read more, become better readers, and learn more words; poor readers read less, become poorer readers, and learn fewer words.

Statement of Research Problem

The emphasis in today's vocabulary instruction should be to teach vocabulary in context not in isolation. If an adolescent who is already struggling with reading is expected to use context clues or textbook glossaries to identify unfamiliar word meanings, they will usually skip the word which results in little or no comprehension of the underlying text meaning. As noted in the literature, direct vocabulary instruction plays a significant role in improving students' reading comprehension. The purpose of this study is to investigate the effect of a directed or focused vocabulary instruction format within a current 7th grade literacy program to determine if the vocabulary instruction significantly improves adolescents' reading comprehension.

Method

Overview of the Project

For this research, a quasi-experimental design was used. The research attempted to identify if there was a benefit to teaching content vocabulary related to the reading of a text selection to enhance reading comprehension in seventh grade students. One group of students used vocabulary acquisition strategies before, during, and after reading and a second group was given the reading without any focus on any content specific words. Students in the control group (Group 1) were given a vocabulary pre-test over the selected text vocabulary words, after which they were instructed to read the selection followed by participation in small-group and whole class discussion of the selection. After discussions, the students in this group took a comprehension, mixed response post-test. The experimental group (Group 2) was administered the same pre-test, but before and during reading the text selection, this group was provided with vocabulary acquisition interventions. The interventions consisted of:

Before Reading Strategies

- Activating prior knowledge
- Focusing on a small number of important words

During Reading Strategies

- Encouraging the use of context clues to identify meanings of unknown words
- Using graphic organizers to provide opportunities for multiple exposures to and development of word knowledge

After Reading Strategies

- Encouraging deep processing to integrate new words into their working vocabularies

After these interventions this group was given the post-test and all scores were analyzed.

Research Question:

Does direct vocabulary instruction have positive effect on reading comprehension of seventh graders? Specifically, Do 7th graders who receive direct content vocabulary instruction prior to reading content text perform better in reading comprehension than those students who are given content text reading with no direct vocabulary instruction?

Description of the Sample

The participants for this study were two classes of seventh grade students from a middle school in the southeastern region. The classes were two reading classes identified as language arts (literature focused) enrichment classes by local administration. Each class consisted of 29 students, ranging from low to middle socioeconomic status and diverse backgrounds. The students are randomly assigned to on-level classes by school administration at the beginning of the school year, and they are representative of the students in the seventh grade at this middle school. One of the two classes was randomly assigned as the treatment group who received direct vocabulary instruction before content reading, and the other class was the control group who received no direct vocabulary instruction. The school where the research took place, is only four years old and has met AYP every year since opening. The school is located in a fairly affluent school zone. Students comprise a mix of all ethnicities, except for Native American, for which there are no students enrolled. The school has a student population of approximately 1300 6th, 7th, and 8th graders. Economically disadvantaged students make up 18% of the total, students with disabilities make up 11%, and English Language Learners make up 1%. The school is not a Title I school, and has no after school support programs for struggling students. Many of the teachers at the school, however, offer their own before or after school tutoring sessions for the students they teach as well as past students who might need review time. There is much support within the school for students both academically and socially and the pervasive atmosphere for students is very positive.

The students who participated in this study consisted of two classes of on-level 7^{th} grade students. Of the fifty-eight participants, twenty-eight were female (48%) and thirty were male (51%). The average age of all students was 12.6 (twelve years/six months) with the youngest being 12.0 and the oldest 13.3. The ethnic make-up of all students was 62% Caucasian, 31% African American, 5% Hispanic, and 2% Asian. All the students placed in these classes had been previously identified as on-level, that is, no special needs students included (learning disabled or gifted) as identified by the previous year's CRCT scores. The average CRCT score was 817 with three students having scores below the mandated pass score of 800. These scores, 798, 798, 796, were erased after the students attended CRCT Summer School and were given the opportunity to re-take the test. All three passed with scores of 802, 810, and 800 respectively. The only other criteria used to measure student abilities was each students' Lexile measure, an indicator of reading ability. These scores were identified on the CRCT results from 2009. The average Lexile measure for all students was 1040L with the lowest score being 700L and the highest being 1250L, with the Lexile range for 6^{th}, 7^{th}, and 8^{th} grade students falling between 665L and 1100L. In addition, the text that was chosen for students to read had a Lexile text measure of 925L and a Mean Sentence Length of 18.27, well within the measure for middle grades of 850L to 1100L.

Data Collection

Reading ability, as identified using students 2009 Lexile Reading Scores, was obtained for each participant in the study as a measure of participant's reading comprehension level prior to the experiment. An unpaired *t*-test was run to identify the comparative pre-test scores of the study groups that showed no statistical significant

differences; two-tailed P value of 0.3145, $t = 1.0150$, with the mean score of Group 1 ($M = 66.52$) being only slightly higher than the mean score of Group 2 (M = 62.03).

Table 1
Comparison of Group Pre-Test Scores

Group	*N*	M	*SD*	Mean Difference	*t*
1	29	66.52	18.74		
2	29	62.03	14.64	4.1	1.01(p>.05)

Lexile levels provide a description of a student's reading comprehension ability. A student receives his or her Lexile measure through formal methods such as a linking assessment where the reporting scale of a norm-referenced or criterion-referenced assessment is linked with the Lexile scale, in this case, the students' 2009 Criterion Referenced Competency Test (CRCT) results, or through informal methods such as listening to a student read a book with a known Lexile measure. In addition, participants' test scores from a teacher developed reading comprehension test were obtained at the beginning of the experiment as a baseline score for comparison within and between the two groups. The reading selection chosen for this experiment was the short story "Amigo Brothers," by Piri Thomas. This story has a Lexile measure of 1110L with a Mean Sentence Length 18.27 words, well within the reading abilities of the students in the two groups whose Lexile scores ranged from a low of 700 to a high of 1250 which represent expected scores for this age group. Typically, a reading selection within a 250 point spread above and below a Lexile measure is considered within a reader's comprehension range, in other words, the reader will be able to understand approximately 75% of the text with no assistance. A Lexile measure does not, however, address the content or quality of the book. By choosing a well known middle grades short story written by a well respected juvenile fiction author and having as its central characters two teenage boys with the theme of competition among friends, the content interest and quality of the selection were addressed.

This experiment was begun during the first week of February, after administering the pre-test to both groups of students. The experiment lasted until the end of the third grading period, which was within the second week of March for a total duration of four weeks. The control group received no specific instruction for this experiment and was finished with the pre-test, reading, and post-test within five days. The intervention group received a series of eight lessons that focused on vocabulary meaning, identifying vocabulary in context, and story comprehension. After the lessons were complete, the students in Group 2 took the comprehension test as the post-test and all test results were analyzed.

Data Analysis and Results

To test the effects of vocabulary instruction on the reading comprehension of 7th grade students, the following null hypothesis was tested at .05 level of significance.

Direct vocabulary instruction will have no positive effect on reading comprehension. 7th grade students who receive direct content vocabulary instruction

prior to reading content text will perform no better in reading comprehension than those students who are given content text reading only with no direct vocabulary instruction.

An independent or unpaired t-test was used to determine if there was a significant difference in reading comprehension between the two study groups. The computer program used to run this data analysis was GraphPad QuickCalcs, a free online statistical calculator. Pre- and post-test scores were compared for the two groups to determine if the instructional methods of the teacher had any effect on student achievement.

Results indicated no significant increase in test scores from baseline through intervention of the experimental group over the control group. Table 2 presents the mean and standard deviation for each group at pre- and post-test.

Table 2

Comparison of group pre- and post-test scores

		Pre-test		Post-test		
Group	***N***	**M**	***SD***	**M**	***SD***	***t***
1	29	66.52	18.74	75.93	17.60	2.3*
2	29	62.03	14.64	79.86	12.88	8.0*
		t=1.01(p>.05)		t=.97(p>.05)		

*p<.05

The data indicated in Table 2 show that the mean score for Group 1 (control) pre-test, even though higher than for Group 2 (intervention) was not statistically significant. The mean score for Group 2 (M = 79.86) post-test is not significantly different from the mean score of Group 1 (M = 75.93).

The null hypothesis is therefore accepted, which means direct vocabulary instruction had no significant positive effect on reading comprehension; that 7th grade students who received direct content vocabulary instruction prior to reading content text performed no better in reading comprehension than those students who were given content text reading only with no direct vocabulary instruction.

However, when analyzing the pre- and post-test scores for median test score point gains, the data indicate Group 2 gains to be almost twice that of Group 1. Median test scores for Group 1 increased an average of only 9.82 points while Group 2 scores increased by 17.77 points, which indicates that students in the experiment group had larger gains in reading comprehension. Consequently, when data for the groups was analyzed by gender, the median test score percentage gains were even more pronounced.

Table 3
Comparison of pre- and post-test scores by gender and by group

		Pre- Test		Post- Test	
	N	**M**	***SD***	**M**	***SD***
Group/Boys					
1	19	63.95	20.18	74.16(10.21)	20.28
2	12	61.25	12.82	79.58(**18.34**)	12.49
Group/Girls					
1	10	71.40	15.44	79.30 (7.9)	11.07
2	17	62.47	16.13	80.06(**17.59**)	13.53

**Figures in parentheses represent average grade percent increase for test scores.*

Table 4
Comparison of pre- and post-test scores by gender

Boys	***N***	**M**	***SD***	**Mean Difference**	***t***
Pre-Test	31	64.87	16.81		
Post-Test	31	76.93	18.94	2.13	2.61*
Girls	***N***	**M**	***SD***	**Mean Difference**	***t***
Pre-Test	27	63.63	17.02		
Post-Test	27	78.69	11.10	5.92	3.80*

Discussion and Conclusion

The purpose of this study was to determine if direct vocabulary instruction would positively impact 7th grade students reading comprehension. The results indicated that there was no significant difference in the performance on post-tests of the experimental group. Specifically, the use of direct vocabulary instruction led to a mean test score increase of only 3.93 percentage points over the control group. These findings do not corroborate previous research on the correlation between vocabulary knowledge and reading comprehension. The explanation for this could be due to the brevity of the experimental time frame. Many of the previous studies related to this research topic have been longitudinal studies, lasting at least for an entire school year. However, upon further analysis of the data, the experimental group appears to have a considerably greater increase in their average test scores from pre- to post-test than did the control group. The data showed that even though the experimental group started with a lower mean test score of 62.03, they achieved an increase of 17.83 percentage points, nearly double the increase of the control groups' 9.41 points. This result has practical significance because it seems to indicate that instruction over a period of time has a positive effect on students learning. It also suggests that vocabulary instruction for those students with the lowest assessed vocabulary knowledge to begin with, do, in fact, benefit significantly from direct vocabulary instruction. Upon examination of individual students' post-test scores, more of the comprehension questions were answered correctly

by those students who had the greatest point increase from pre- to post-test than by those students who already knew the content vocabulary as indicated by their pre-test scores, therefore, indicating that "greater learning" did occur for them. This is supported by the research conducted by Heilman, Blair, and Rupley (2002) in which they concluded that students with vocabulary difficulties exhibited increased abilities to understand reading selections when given the opportunity to develop their vocabularies.

A number of limitations must be considered when interpreting the findings of this investigation. First, the sample consisted of only two classes of students. These classes were made up of a generalized cross-section of 7th grade students. In order to increase the external validity of the findings, the study would need to be replicated using many more students. Second, all materials used were created by the teacher and might not be the most reliable measurement instruments for this experiment. In future investigations of this sort, the same measurement instruments and vocabulary activities used by other researchers could be utilized in order to replicate, more specifically, the previous results. Also, the study included only seventh-grade on-level students and, therefore, needs to be replicated with a broader range of students across a variety of age and grade levels and content areas, as well as ability and disability categories (advanced placement and special-ed students). The brevity of the study, as previously stated, could be a significant limitation. Students need to be taught the process of understanding vocabulary and then given multiple opportunities and exposures to many new words in order to truly impact their understanding and correct use of these new words. And finally, by using a teacher or teachers, other than the researcher, to conduct the vocabulary lessons with the students might result in different outcomes of the experiment.

However, despite the small sample size, the findings have implications for practice for teachers and researchers. For example, the study demonstrated that the use of direct vocabulary activities before, during, and after reading a selected text was effective at improving the comprehension of some students as indicated by their test scores. The structured format of the concept model (designing a diagram of the vocabulary word, writing the definition and characteristics, and providing examples and non –examples) provided students and teachers with a concrete outline or picture of the content-area vocabulary words to be learned compared to no direct instruction. Several students showed test gains of twenty points on the post-test from the pre-test as a result.

In this study it was seen that the experimental group answered a significantly greater number of vocabulary dependent comprehension questions correctly following the teaching and learning activities than did the control group. This finding, that improving the ability to infer meanings from written context leads to increases in vocabulary knowledge, which in turn leads to improvements in reading comprehension, provides evidence in favor of there being a direct relationship between vocabulary instruction and reading comprehension.

Further research on the need for increasing vocabulary knowledge in middle grade students is necessary but should focus on teaching students how to independently conceptualize the meaning of words without teacher intervention. Students need to know and be fluent with a number of strategies for identifying word meanings in order to facilitate their understanding of texts whether in the classroom or reading on their own. When students know that they can learn or "figure out" unknown words on their own, they will begin to develop a level of comfort with reading that many do not have. It has been our experience as a middle school literature teachers that students, no matter what

their Lexile score may be, want to read books and truly do enjoy reading, if they have the opportunity to read something that is at their comfort (independent), not frustration, level. It goes without saying, though, that as educators, it is our obligation and responsibility to challenge and encourage our students to take on more and more challenges in the name of "learning and progress." But for a student to achieve success in this area, teachers must teach them first how to be successful with single words. If we are to agree with the research of Cunningham and Stanovich (1997), then vocabulary instruction must begin in the primary grades and must continue throughout a child's years in school with a rigorous focus on vocabulary acquisition and development. It is imperative that students move past the dictionary definition of words alone to the more complex cognitive function of knowing all about a word as it relates to literacy and comprehension.

References

Braze, D., Tabor, W., Shankweiler, D., & Mencl, W. (2007). Speaking Up for Vocabulary: Reading Skill Differences in Young Adults. *Journal of Learning Disabilities*, *40*(3), 226-243. Retrieved from ContentSelect Research Navigator database.

Fore III, C., Boon, R., & Lowrie, K. (2007). Vocabulary Instruction for Middle School Students with Learning Disabilities: A Comparison of Two Instructional Models. *Learning Disabilities -- A Contemporary Journal*, *5*(2), 49-73. Retrieved from ContentSelect Research Navigator database.

Foster, W., & Miller, M. (2007). Development of the Literacy Achievement Gap: A Longitudinal Study of Kindergarten Through Third Grade. *Language, Speech, & Hearing Services in Schools*, *38*(3), 173-181. Retrieved from Content Select Research Navigator database.

Harmon, J., Hedrick, W., & Wood, K. (2005). Research on Vocabulary Instruction in the Content Areas: Implications for Struggling Readers. *Reading & Writing Quarterly*, *21*(3), 261-280. doi:10.1080/10573560590949377.

Harmon, J., Hedrick, W., Wood, K., & Gress, M. (2005). Vocabulary Self-Selection: A Study of Middle-School Students' Word Selections from Expository Texts. *Reading Psychology*, *26*(3), 313-333. Retrieved from ContentSelect Research Navigator database.

Heilman, A.J., Blair, T.R., & Rupley, W.H. (2002). *Principles and practices of teaching reading*. (10th ed). Columbus, OH: Merrill.

Joshi, R.M. (2005). Vocabulary: A critical component of comprehension. *Reading & Writing Quarterly, 21*, 209-219.

McKeown, M.G., & Beck, I.L. (2003). Direct and rich vocabulary instruction. In J.F. Baumann & E. J. Kame'enui (Eds.). *Vocabulary Instruction: Research to Practice*, (13-27). New York: Guilford.

Nash, H., & Snowling, M. (2006). Teaching new words to children with poor existing vocabulary knowledge: a controlled evaluation of the definition and context methods. *International Journal of Language & Communication Disorders*, *41*(3), 335-354. http://search.ebscohost.com, doi:10.1080/13682820600602295

Nelson, J., & Stage, S. (2007). Fostering the Development of Vocabulary Knowledge and Reading Comprehension Though Contextually-Based Multiple Meaning

Vocabulary Instruction. *Education & Treatment of Children*, *30*(1), 1-22. Retrieved from ContentSelect Research Navigator database.

Neuman, Susan B. (2006). Building Vocabulary to Build Literacy. *Early Childhood Today*, 10701214, Vol. 21, Issue 2.

Nippold, M., Duthie, J., & Larsen, J. (2005). Literacy as a Leisure Activity: Free-Time Preferences of Older Children and Young Adolescents. *Language, Speech, & Hearing Services in Schools*, *36*(2), 93-102. Retrieved from ContentSelect Research Navigator database.

Ricketts, J., Nation, K., & Bishop, D. (2007). Vocabulary Is Important for Some, but Not All Reading Skills. *Scientific Studies of Reading*, *11*(3), 235-257. doi:10.1080/10888430701344306.

Rupley, W.H., & Nichols, W.D. (2005). Vocabulary instruction for the struggling reader. *Reading & Writing Quarterly, 21*, 239-260.

Shaaban, K. (2006). An Initial Study of the Effects of Cooperative Learning on Reading Comprehension, Vocabulary Acquisition, and Motivation to Read. *Reading Psychology, 27*(5), 377-403. doi:10.1080/02702710600846613.

Tam, K., Heward, W., & Heng, M. (2006). A Reading Instruction Intervention Program for English-Language Learners Who Are Struggling Readers. *Journal of Special Education, 40*(2), 79-93. Retrieved from ContentSelect Research Navigator database.

Tannenbaum, K., Torgesen, J., & Wagner, R. (2006). Relationships Between Word Knowledge and Reading Comprehension in Third-Grade Children. *Scientific Studies of Reading*, *10*(4), 381-398. doi:10.1207/s1532799xssr1004_3.