EFFECTIVE READING INTERVENTION STRATEGIES IN SIXTH GRADE CONTENT AREAS: WHAT WILL RAISE STUDENT READING COMPREHENSION?

by

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Abstract

The author examined the characteristics of effective intervention strategies that have been used in social studies and science classrooms to help raise sixth grade students' reading comprehension. It is a challenge to teach students who struggle with reading in the general education classroom, and perhaps more of a challenge in content-based classrooms. Yet schools that are trying to make Adequate Yearly Progress to meet the mandates of No Child Left Behind must find a way to reach these struggling readers. Intervention strategies examined include reading fluency, reading comprehension, vocabulary acquisition, and reading motivation. The literature review takes a critical look at intervention strategies that have been tried in the classroom and the effect of those interventions. A scarcity of research-based interventions begs for more research to be conducted and documented.
Chapter I: Introduction

Statement of Problem

Reading success for students, a critical component of the No Child Left Behind (NCLB) law, is an ongoing problem for many classroom teachers, including this author. Many students are coming into the author's sixth grade classroom reading below grade level. On a district reading exam, given in mid-January, five students from the author's classroom achieved test results showing them reading in the intervention or basic information level. Eight students in the classroom achieved test results showing them reading at grade-level. Three students from the classroom were administered tests at the third grade level. Two of the students who achieved test results in the third grade intervention level are English Second Language (ESL) learners, and the third is a special education student. (Grade Level Assessment Device, Eastern Upper Peninsula Intermediate School District, 2009). Although students are encouraged to read for pleasure, and reading instruction is part of the classroom language arts curriculum, much of the reading done in sixth grade classrooms involves reading text for information. Reading below grade level presents a distinct problem when students are asked to read text and comprehend information from the reading. Upon analyzing Michigan Educational Assessment Program (MEAP) test data for language arts, science, and social studies from previous years, the author and her colleagues discovered that many of the questions students answered incorrectly stemmed directly from reading difficulties and lack of vocabulary.

In a January 2006 interview with National Public Radio, Dr. David Dunn, Chief of Staff, United States Department of Education, acknowledged that a reading problem still exists for middle school students; in fact, reading scores for middle school students actually declined over
the past four years (Dunn, 2006). Further investigation using the Nation's Report Card Reading 2007 revealed a slight increase in reading scores from 2005 to 2007 for fourth graders, particularly those in the tenth, twenty-fifth, and fiftieth percentiles. The same report card indicated a very slight score increase for eighth graders performing at the basic level, but no significant change for students performing at or above proficient (The Nation's Report Card Reading, 2007). With the emphasis on student achievement from NCLB and the need for schools to make Adequate Yearly Progress (AYP), reading intervention must take place to assist middle school students in overcoming their reading deficits if schools are to continue to make progress in improving academic achievement. Dunn, in the same interview, indicated that reading growth has been demonstrated on the Nation's report card over the past five years. While the reading growth for children up to age nine is impressive, the growth does little to alleviate reading deficits at the middle school level for the next few years (The Nation's Report Card Reading 2007). Patiently waiting for reading problems to go away in middle school because of reading gains made by fourth graders indicates a belief that once a child is a good reader they will remain a good reader. In a longitudinal study done on 187 children, the statement that once a child is a good reader they will remain so, could not be substantiated. The researchers found that children move up and down a reading achievement scale. There are times when a child is a good reader, times when they are an average reader, and occasionally when they are a poor reader (Phillips, Norris, Osmond, & Maynard, 2002). Clearly, some interventions need to occur, but what interventions? While researching information on best practices for reading intervention in the middle school classroom, the author decided to conduct a research project based upon reading interventions in content area classrooms.
Research Question

What are the characteristics of effective intervention strategies in sixth grade social studies and science to help raise students' reading comprehension?

Definition of Terms

What is learning to read and how does learning to read occur? Learning to read encompasses three different skills: pronunciation of words, identifying words and understanding their meaning, and bringing meaning to text in order to get meaning from text (NCREL, 2009). The actual process of learning to read is based upon many theories, but most theories circle back to include the metacognitive theory as the base. Metacognitive theory indicates that reading is based upon activating prior knowledge, giving attention to important ideas, and always evaluating the information being read for consistency with prior knowledge (Gourgey, 1999; Nolan, 1991). A simpler way of stating the theory is “having knowledge (cognition) and having understanding, control over, and appropriate use of that knowledge” (Collins, 1994, p. 1).

Background knowledge, another term the reader will frequently encounter, is loosely defined as the knowledge of a topic that an individual brings with them to classroom learning. Background knowledge is sometimes referred to as prior knowledge (Marzano, 2004).

As students move through their academic career, they are expected to use knowledge gained as they learned to read and the background knowledge they bring to school, and to transform the ability to read into the ability to read to learn. Reading to learn may also be termed reading for a purpose. In either case, reading to learn generally encompasses reading to locate information, solve a problem, build a knowledge base, or report information (Smith, 2000). In the classroom, children are expected to be fluent enough readers from learning to read that they
are able to make the transition to reading textbooks for knowledge around the time they enter the fourth grade (Willingham, 2006). At the time children make this transition, it is critical for teachers to begin teaching strategic reading skills, or skills that will enhance comprehension. Spor (2005) indicated that strategic reading skills include strategies that can be used before, during, and after reading with the purpose of better comprehension and the ability to remember what was read. Lastly, the goal of using strategies is to build comprehension. Comprehension is defined as understanding what has been read and gaining meaning from what has been read (National Reading Panel, 2000).

Students are moving from classroom to classroom with reading deficits that hinder their ability to read text and learn. Conventional reading lessons in the sixth grade classroom do not appear to be alleviating the problem (Grade Level Assessment Device, Eastern Upper Peninsula Intermediate School District, 2008). Those who arrive as struggling readers often leave as struggling readers. Middle school teachers do not feel trained to diagnose reading problems or fix them (Silverman, 2006). One middle school teacher in the author's district told the author that she had moved away from using textbooks in her science classroom. Her reasoning included the fact that she had so many students coming into the classroom that did not know how to read that using the textbook was useless. Instead she uses notes on the overhead, reads material to the students, and tries to do as many hands-on activities as possible. When asked if she had tried to teach reading strategies to the students so they could read textbooks and materials on websites, the science teacher politely replied, “I have always expected students to come into my classroom knowing how to read. I do not know how to fix reading problems. I teach science.”

The district purchased a new reading series for the elementary school at the beginning of
the current school year. Is a new reading series the answer to the problem, or are there more critical intervention strategies that need to be used with struggling readers? The information garnered from literature indicates that more than a new reading series is the answer.
Chapter II: Review of Literature

One of the first questions that needs to be answered to move forward in determining strategies and interventions for reading problems is to determine how children learn to read. As previously mentioned, reading constructs are based upon the metacognitive theory. Students activate prior knowledge, give attention to important ideas, and evaluate information that is read for consistency with their prior knowledge. According to the National Reading Panel, reading includes the constructs of phonemic awareness, phonics, fluency, vocabulary, and comprehension (2000). Phonemic awareness, the understanding that words are made from individual sounds, and phonics, the recognition that certain letters have certain sounds, fall within the parameters of background knowledge. A general consensus from conversations with the author's colleagues and reading is that students arrive in the upper elementary grades with these two constructs rooted in place. The other three constructs, fluency, vocabulary, and comprehension, are, to this author, the “big three” of reading. The “big three” form a cyclical relationship where excelling at one tends to cause growth in the other two, and failing to excel at any of the three leads toward reading difficulties. Roberts, Torgesen, Boardman, and Scammacca (2008) suggested that motivation should also be a reading construct, particularly for older students. Therefore, this construct will be included with fluency, comprehension, and vocabulary by this author.

As this author searched for research that would suggest strategies for use in content-based classrooms, she noted that not many research studies have been completed in regards to helping struggling readers in a content-based classroom, unless the struggling reader is labeled with a learning disability. However, the research that was found offers solid, research-based ideas to use in both science and social studies classrooms, and much of the research, even for special
education students, seems applicable to the regular classroom.

Fluency

Building fluency, as well as integrating science, reading, and writing processes into a middle school curriculum for students who read below grade level, was the goal of the year-long study by Gaskins et al. (1994). Researchers worked over the summer with teachers at the Benchmark School in Media, Pennsylvania to design a curriculum that focused on a few major science concepts and prepared the students to read and write about the concepts.

Fifty students were selected from grades six through eight at the Benchmark School. The students, who read at least two years below grade level, were taught science following the designed procedure before the data collection phase of the study began. Students were introduced to the curriculum throughout the first two trimesters of a school year. During this time students were presented with two different science units. After six months of curriculum presentation, the researchers and teachers continued with the school-based inquiry and data collection.

Students were given problem-centered instruction about simple machines. Students were explicitly taught reading, writing, and thinking strategies for developing understanding through teacher modeling and guided support (Gaskins et al., 1994). The skills and strategies specifically taught included: stating the problem, searching for and recording information, collaborating with peers, organizing ideas in both visual and written format, and presenting experiments or demonstrations. This final skill allowed students to show they could transfer knowledge to a new situation (Gaskins et al., 1994). The problem-centered instruction continued for six weeks. At the conclusion of six weeks, the students were given a complex problem to solve that involved application of concepts they had learned throughout the year.
The culmination of the project was an eight-day performance-based assessment. The group of fifty students were divided in half, and each group received a problem statement that had application to real-life. Students worked through the problem and were graded, by points, on identifying the problem, selecting resources, creating a picture of their solution, writing directions to solve the problem, explaining the scientific principles, and demonstrating the principles (Gaskins et al., 1994).

Much of the data accumulated was qualitative, although students were tested both before and after the curriculum was instituted. The authors reported significant gains by students in stating the components of the problem, selecting appropriate reading materials, expressing relevant science principles in written form, and applying what was learned. There was little gain reported on making an illustration of the solution and explaining the procedure for solving the problem. The areas of gain were skills that were specially taught, while those not showing gain were not specifically taught (Gaskins et al., 1994). One of the researchers also interviewed the teachers and supervisors for feedback. The researchers reported that students were enthusiastic and approached the assignment with comfort. Because the assessment was not typical, teachers were not sure that students were achieving the desired goals, but concluded that students did make gains by the end of the intervention.

From the study it is known that the students were selected because they read below grade level. The researchers do not explain how the school or the students were chosen for the study. The data collected and analyzed is also nebulous. It is difficult to ascertain just how helpful the new curriculum was for the students. One cannot tell level of gains in the various areas taught to the students. A bit of searching by this author found that the author of the study is a co-founder of
the school. Based upon the data analysis and the fact that one of the researchers is a co-founder of the school, one has to consider that there is the potential for a great deal of bias in the reporting of results from this study.

The curriculum developed in this study is very similar to project-based learning. Teachers who are familiar with project-based learning know the tremendous amount of work involved in implementing a project in the classroom. Many teachers, including those in the study, feel that using real-world application for concept development is both feasible and preferred.

**Comprehension**

What is a teacher to do when students in the content-based classroom read below grade level? How are they to use the textbook and teach the content that needs to be taught to someone who cannot read the material? Authors McCoy and Ketterlin-Geller (2004) developed a plan for instructional delivery in content-based classrooms. Their plan emphasized the teacher's responsibility in identifying the key concepts within the curriculum. After identifying concepts, the teacher is to develop a graphic organizer for students to use as they learn the concept. Finally the student shows success in mastering the concept by applying the concept to another instance that requires critical thinking.

Following development of the plan for instructional delivery, the authors conducted a study to explore the effects of using the material on student understanding and retention of the text material. One teacher in the study structured his lesson in a traditional lecture format. The other teacher taught a lesson using a concept-based approach, incorporating a graphic organizer to help her students organize the content of the text. After presenting the material, students in both classrooms were assessed for retention. The authors found that students in both classrooms
retained information when tested using lower-level operations. They also found that students taught using the concept-based approach showed consistent improvement toward mastery of higher order thinking tasks, no matter what the level of reading skill was (McCoy et al., 2004). This study is written as part of an ongoing research program through the University of Oregon's Behavioral Research and Teaching group. Contact with the University of Oregon's Behavioral Research and Teaching group for the tech report on this study has been made.

In two different research studies, one by Harmon, Katims, and Whittington (1999), and the other by Katims and Harmon (2000), researchers used the PEP (Person, Event, Place) strategy to help struggling readers comprehend what they were reading in their social studies texts. Officially called the PEP Road Map Instructional Framework, PEP is an instructional procedure designed to work with students across a wide range of reading abilities (Harmon et al., 1999). The procedure includes a comprehension enhancement strategy, note taking, a road map, and a critique sheet.

In the first study by Harmon, Katims, and Whittington (1999), the PEP framework was implemented in a seventh-grade reading improvement class. The researchers brought the framework into the classroom at the request of the classroom teacher. Researchers used a pre- and post-test design to measure effectiveness of the PEP framework, along with a generalization check. The reading passages used in the three tests were of varying lengths, and each was accompanied by ten multiple-choice questions. The generalization test, taken during social studies with the social studies teacher, was taken approximately two weeks after more practice with PEP in the reading classroom. Test scores on the pre- and post-test ranged from twenty percent to sixty percent for the pre-test and seventy percent to one hundred percent on the post-
test. The average generalization score ranged from sixty percent to one hundred percent, including an average score of seventy-three percent for the students with learning disabilities. Researchers also collected qualitative data by collecting pre- and post – framework student notes, and analyzing the notes for important text-based information. Researchers used a holistic approach to analyze the notes, looking at the quality and quantity of information. Many of the pre-framework notes were cryptic and disorganized selections of important information. The post-framework notes showed increased quantity of notes, as well as organized relevant information. Researchers also collected qualitative data from the teacher, who reported that students were highly engaged in each phase of the framework and that she was very happy with the outcome.

The use of pre- and post- testing gave a good indication of the validity of the framework. However, it has to be noted that this study was performed on a very limited basis with only one group of students being presented the model for testing. There is no documentation of how the classroom or the students were selected for the study. Because the study was only conducted in one classroom, there are no comparisons to be sure that the framework worked as well in other environments. The study would have presented a stronger indication of success had it been tried in several classrooms with more diverse populations being studied at the same time.

In the second PEP study, Katims and Harmon invited teachers at a local middle school to use the strategy in their existing social studies classrooms. The classrooms included a sixth-grade world geography class, a seventh-grade Texas history class, and an eighth-grade American history class. The teachers decided to implement the PEP Road Map framework in one classroom each.
PEP study, round two, has even less information in regards to actual research being completed as part of a research study. As in the previous PEP study, a pre- and post-test on comprehension was given to all participating students. According to researchers, the post-test showed significant academic gains in comprehending social studies text passages, although there are no actual scores included to confirm or deny this assertion (Katims & Harmon, 2000). Student notes were once again analyzed as a way to look at cognitive processes. Once more, researchers reported that the notes reflected growth in focus and detail in writing about relevant information. Teachers involved in the implementation reported that students were actively involved in the PEP process.

Although the teachers who used PEP each taught PEP to one class and had other classrooms covering the same social studies topics, there is no comparative data suggesting how students performed in the PEP study versus the regular classroom. This author finds the lack of comparison data to be very frustrating. In the quest for research-based strategies to use in the content-based classroom, it is disappointing to find a framework like PEP that looks promising, only to discover that the research behind the framework does not seem to be well supported.

Williams, Stafford, Lauer, Hall, and Pollini (2009) investigated teaching second graders reading comprehension strategies related to second grade science content. The authors pointed out that very little expository text is used in lower elementary classrooms because expository text is thought to be more difficult than narrative text. Expository text has many different types of structure, including compare and contrast, causal relationships, and sequencing.

The authors used two hundred fifteen second grade students of various ethnicities and special education levels as test subjects. Williams et al. (2009) built an instructional model for
use with the second graders that was structured to proceed in a systematic manner. The model was scaffolded to proceed from simple to complex, and incorporated meaningful and interesting tasks. Designed as a follow-up to a previous study in which students were taught to compare and contrast expository text, students in the present study were taught the additional strategy of pro-con. The study was conducted to find out if students could take the information garnered from learning about compare and contrast, add the information from the pro-con strategy, and use said information to improve student comprehension of expository text.

To conduct the study, Williams et al. (2009) randomly assigned fifteen volunteer teacher participants and two hundred fifteen second graders to three different experimental groups. Researchers used a pretest-post test design and all statistical analysis was performed with the classroom as the unit for analysis. Williams et al. (2009) gathered data in a variety of ways to substantiate their research. Participating teachers were asked to complete attendance sheets, as well as document information about each of the lessons including whether the lesson was completed or not, materials added to or left out of the lesson, and student attention during the lesson. Students completed the Word Identification and Passage Comprehension subtests of the Woodcock Reading Mastery test as a pretest and post-test, as well as audio taped pretest and post-test sessions on their ability to perform several of the tasks to be taught/taught in the instructional program being implemented. Field observations of all ten classrooms were conducted twice during the course of the study.

The completed testing yielded nineteen different measures, seventeen of them directly related to text structure instruction. Williams and her colleagues grouped these seventeen measures into five categories and performed several different statistical analyses, including
analysis of variance, for validity on each category. Teams of researchers also completed independent blind scoring of ten percent of the protocols, randomly selected from all three groups. Each of the tested measures confirmed to researchers that the treatment group receiving explicit text-structure instruction performed as expected with this group being successful in writing, comprehension of the second strategy, and comprehension of authentic text. The authors were also able to duplicate the findings from their first study.

This author is impressed with the degree of precision displayed in the research and the care taken in the display of data. The findings from Williams et al. (2009) have implications for practitioners as they look at timing to introduce text-structure strategies to children in the elementary grades. While the general consensus has been that students younger than third or fourth grade do not have the working memory to work on fluency in decoding as well as strategy comprehension of text (Willingham, 2006), this may not be true. Clearly more research needs to be done to validate these studies, but teachers may be able to introduce comprehension strategies to children at a younger age and not interfere with decoding abilities.

Are there special reading strategies that need to be used with upper elementary and middle school students who have reading disabilities? Authors Manset-Williamson and Nelson (2005) compared two different approaches for teaching strategies to students. In both cases the authors used the strategies of phonemic awareness/analysis, decoding, and fluency. One treatment group also received explicit instructions on comprehension strategies, observed the strategies being modeled and had their application of comprehension strategies monitored at each meeting. The other group received guided reading where the tutors modeled comprehension strategies for the first three or four sessions and monitored practice during the middle and last
The selection of participants in the study was quite limited and may have influenced the results of the study. Researchers did not accept students who had emotional/behavioral disorders, autism spectrum disorders, or severe hearing or vision impairment. One student with ADHD was accepted into the study (Manset-Williamson & Nelson, 2005). The final sample was comprised of twenty-one middle school participants. The participants were randomly assigned to the treatment groups, and twenty participants finished the study. Participants were given the Woodcock Johnson Tests of Achievement at the beginning of the study and then again at the end. Students also read aloud short stories and then retold the important parts of the story in a pre-test/post-test setting. The story retell was recorded in each case for transcription and rating. The story retell was then graded by two different researchers with an inter-rater reliability of .91 for the quality score and .81 for the main idea score. Scores were compared within treatment groups using sample t-tests to see if post-test scores were significantly higher than pre-test scores. Least-squares analysis was also used to calculate average session gain in reading fluency. A one-way analysis of covariance was used with the post-test scores of both treatment groups and pre-test scores as covariates to determine significant differences between treatments on dependent variables (Manset-Williamson & Nelson, 2005).

The study was conducted in a community-based reading clinic with one-on-one tutoring as the teaching method. Overall, students in both groups responded well to the intervention. Researchers also showed that students who were in the explicit instruction group fared slightly better in reading comprehension than those in the guided reading group. In the areas of phonemic awareness/analysis, decoding, and fluency, the two groups showed very little difference in
meaningful gains.

The results achieved through this study would most likely not be able to be replicated in the regular classroom with limited one-on-one time and a more diverse mix of student abilities. Classroom teachers may be able to use the study to guide their practice in presenting reading strategies to students. The treatment group that showed the most growth was the group that received explicit instructions on reading strategies. Teachers modeling the strategy each time it is presented have the potential of reaching the students in the classroom who need the extra reminder on how to use a particular strategy. Classrooms that have an aide who can work one-on-one with a particular student might also be successful with the more explicit strategy modeling.

Many classroom teachers teach the reading strategy of self-questioning. They teach students to explore what is being read through curiosity. “Who is this story about?”, “When did the story take place?”, and “Why is the author explaining this to me?” are all sample questions a student might ask as they are reading. Other teachers encourage students to predict what will happen in a story as they are reading. Thomas Nolan wondered what would happen if reading strategies of self-questioning and prediction were combined. Would the combination of strategies increase student comprehension? Nolan designed his research study to answer that question (Nolan 1991).

According to Nolan (1991), self-questioning directs the reader's attention to the important information in the text, while prediction provides a map to guide the student's reading. Nolan (1991) tested his theory on forty-two students in the sixth, seventh, and eighth grades whose reading comprehension was up to 3.9 years below grade level. Students were divided randomly
into three groups: self-questioning with prediction (SQWP), self-questioning (SQ), and control vocabulary intervention (CVI). Passages used for the training period were selected from *Mini-Units in Reading, Book 1* and *Reading and Reasoning: Paragraph Meaning 2*. The Stanford Diagnostic Reading Test was used for reading comprehension assessment (Nolan 1991). For the groups using self-questioning, the researcher provided instruction, modeling, and a rationale for using the strategy. For the control group Nolan (1991) provided instruction and application that focused on vocabulary development.

Each group received three one-hour training sessions over a three week time period. After the final session for each group, the researcher tested the groups for reading comprehension. A one-way ANOVA was used to assess the main effect of the treatments for all three groups. Results showed that the students who used self-questioning with prediction had the highest comprehension scores for students at all four levels of reading ability. The researcher also reports that students felt learning the strategies helped them in classes like social studies.

The results of this study have not been replicated to this author's knowledge. There are many variables to be considered. The fact that everything, from the selection of the reading materials, to the weekly student training, and the evaluation of the results, was conducted by one person leads one to think that there is a great potential for bias. The fact that the learned strategy is carrying over into other classes should be one that each teacher hopes will happen. Our classrooms are not inclusive for what is taught. Students will hopefully be able to take what is learned in one classroom and utilize that information as a scaffold in other classrooms.

**Vocabulary**

A walk into most early elementary classrooms will show you the writing on the wall.
Early elementary teachers frequently use word walls to keep vocabulary words and word families visual for all students. While a study about word walls does not specifically address vocabulary learning in a content-based classroom, the research does offer insight into the use of word walls and their importance in vocabulary acquisition (Harmon, Wood, Hedrick, Vintinner, & Willeford, 2009). Building a word wall in a content-based classroom could follow the same procedure and make critical links between vocabulary and scientific, mathematic, or social studies concepts.

The authors of the study worked with two classrooms of seventh graders, representing special education students, as well as students with a wide range of reading abilities. Both classrooms had the same teacher. Twenty-three seventh graders in one classroom self-selected the words to be studied, while the other classroom of twenty-one seventh graders continued their regular vocabulary program. Students who self-selected words were given specific word-learning activities. Some of the activities were small group activities, while others were whole class activities. The students following the regular vocabulary program worked on activities from a commercial vocabulary workbook (Harmon et al., 2009).

Over the course of six weeks, the researchers gathered both qualitative and quantitative data. Qualitative data included pre-interviews with both classes about word walls, artifacts from the activities, and field notes. Quantitative data consisted of pretests for both groups as well as results from teacher prepared weekly tests. Two weeks after the conclusion of the research the teacher gave a final test. The researchers used the results of the final test to determine differences in retention by the two groups.

Upon analyzing the collected data, the researchers determined that there was no
significant difference between the scores of the two groups. That is, there was no significant
difference until the delayed test was administered. Here the researchers found that the class using
the word wall achieved higher scores on the application section of the test. Test results for the
students in the word wall group showed students with a higher level of understanding of word
meaning. Students in the word wall group were also able to apply word meanings to prompts
better than those in the standard vocabulary group (Harmon et al., 2009).

While this research study looked promising for helping students achieve deep
understanding of vocabulary words, this author would caution that the research was conducted
over a fairly short period of time and with only two classes. One might also question how one
teacher could teach two separate classes of students, one using a word wall and one not,
presumably in the same classroom. There are definitely a few inconsistencies here that urge the
reader to exercise caution when adopting the idea.

Vocabulary teaching in the middle school grades often entails looking at a list at the
beginning of a chapter in the literature book and telling students to find the definitions to the
words. Students grumble and do what is asked. Harmon (1998) set out to explore vocabulary
teaching and all it entails. Basing her estimate (as cited by Harmon, 1998) on a study by Nagy
and Anderson (1984), Harmon (1998) notes the importance of vocabulary study with her
reiteration that “the average student in the middle grades and beyond must acquire approximately
3,000 new words yearly in order to stay current with each succeeding grade level” (Harmon,
1998, p. 518). Over the course of the study, Harmon (1998) observed a literature-based program
in one seventh grade class. In particular she was examining the explicit and implicit actions of
the teacher and the responses made by the students to vocabulary teaching and learning events.
Harmon (1998) did direct observation of the teacher and her students over a six-month time period as an observer in the classroom who had no interaction with teacher or students. Data collection in this qualitative study occurred through interviews, observations, taped transcriptions of classroom interactions, and guiding questions and responses (Harmon, 1998). Harmon (1998) observed a teacher who was recommended by a middle school principal because of her talent and reputation for teaching reading. The principal identified the teacher as excellent. The researcher was an observer in the classroom at every class meeting for six months. The reading program within the classroom contained whole-class activities, group activities, and independent reading. Each of these components is reported to have word learning opportunities built into them through social interactions, clarification, modeling, and other active word learning methods. The researcher reported that her observations led her to believe the teacher's reading program “resembled a program called curriculum as activity” (Harmon, 1998, p. 528). Curriculum as activity (as cited in Harmon, 1998) was previously described by Burke and Short and cited in Heald-Taylor (1996).

It is difficult to find fault with observations conducted and recorded over a six month time period by the same observer, except to say that one feels it might be easy for the observer to become biased in observations over time, especially if the observer is impressed with what happens in the classroom. It is also difficult to know if this teacher's reading program is exemplary more than any other as there is no comparison given to other programs.

A framework for learning vocabulary in the social studies classroom was developed by authors Harmon and Hedrick (2000). The framework, titled Zooming in and Zooming out was designed to help students learn the vocabulary and concepts associated with social studies, even
when exposure to these terms and concepts is not extensive. The framework was designed using research previously done by other researchers such as Ryder and Graves (1997), and Vacca and Vacca (1999) (as cited by Harmon & Hedrick, 2000).

Harmon and Hedrick's framework is divided into two parts. Part one of the framework looks at a given social studies concept in the big picture, while part two looks at the same concept in a microscopic view, hence the zooming in and zooming out feature. The visual framework is also designed to guide and support student interaction with text passages both during and after reading. Zooming in and zooming out allowed student responses at strategic places in the lesson. Although no research could be found substantiating that this process has been researched and tested in the classroom, the process bears a second look for possible use in the classroom.

Motivation

Roberts et al. (2008) suggested motivation as a construct of reading that needed to be taught or monitored. Toboada, Tonks, Wigfield, and Guthrie (2008) decided to look at the variables of motivation and cognition and the effect these variables had on reading comprehension. The authors noted an increased focus on reading comprehension skills as students move through their school careers. Previous studies have looked at cognitive variables as predictors of reading comprehension, as well as motivation variables as predictors of the same. However, the authors felt that few studies have looked at either predictor while controlling for the other. Toboada et al. focused on five related dimensions of reading motivation that they termed *internal motivation for reading* (italics original). The dimensions included in this construct are perceived control, interest, self-efficacy, involvement, and social collaboration.
(Toboada et al., 2008). The authors focused on internal motivation because they felt that individuals who are internally motivated show more perseverance and effort in their activities.

The authors used two hundred five fourth grade students from four schools in one school district as test subjects. Two reading measures, a multiple-text reading comprehension measure and the Gates-MacGinitie reading comprehension test, were administered to students twice in the school year. Student background knowledge was activated in a writing activity focusing on a pair of biomes. Researchers scored the open-ended writing activity using a rubric with six levels. The rubric levels were hierarchical with level one reflecting minimal statements by the student and level six showing interrelationships between organisms, habitats, and biomes. Researchers then gave students reading packets, created by the researchers, on biomes. Each of the three packets was parallel in difficulty, length, relevant sections, distracters, and illustrations. Students browsed the packets, and then answered questions at various levels of complexity (Toboada et al., 2008).

The multiple-text reading comprehension measure was given to the students to assess knowledge built from text. This open-ended, constructed-response measure asked students to write what they knew after reading a packet and taking notes. The written responses were scored using the same six level rubric described above by two raters. Inter rater agreement for twenty responses was one hundred percent, and eighty percent for exact coding. Any time that there was a discrepancy in rating, a third rater resolved the differences. The Gates-MacGinitie Reading test was scored for across-time reliability. Internal motivation was rated by the classroom teachers for each individual student. Students were rated on reading interests, involvement with text, reading confidence, reading discussion with peers, and independent reading. The responses were rated on
a response format from one to five, so students received a score between five and twenty-five. Cronbach's alpha reliability test was performed with a reliability of all items at .90 (Toboada et al., 2008).

Using multiple regression analyses, the second scores for reading comprehension as the dependent variable, and motivation, background knowledge, and questioning as the independent variables, the researchers discovered that each of the variables were significant to the variance in the other two. The researchers then operationalized the growth from the first administration of the reading comprehension measures into the equation before the regression of the other three independent variables. The introduction of growth allowed researchers to look at causes of growth compared with each of the other independent variables. Comparison of growth with independent variables has been done by Allen, Cipielewski, & Stanovich, 1992, and Onatsu-Arvilommi & Nurmi, 2000 (as cited by Toboada et al., 2008). Researchers concluded that internal motivation is a strong predictor of growth in reading comprehension (Toboada et al., 2008).

Caution should be used when relying upon this study to determine the strength of internal motivation as a factor. Teachers marked the amount of internal motivation they felt students had, thus the reporting for this component of the research was quite subjective. The research was also only conducted on one age group, and only conducted one time. Given these limitations, it is impossible to know if these two strategies would correlate for other age groups.

*Multi-Construct Literature*

As previously mentioned, reading instruction in the classroom does not end in elementary school. Many students move on to middle school, and some to high school, needing reading
instruction to be successful students. The National Institute for Literacy published a document in 2007 that is geared towards content-area teachers of adolescent students. The document, a summary of some of the current literature on adolescent literacy research and practice, is meant to suggest methods to build adolescent reading and writing skills in the content-based classroom. A working group of representatives from the National Institute of Literacy, the U. S. Department of Education, and the National Institute of Child Health and Human Development worked together using the National Reading Panel report and found source documents with recommendations for best practices for practitioners. Most of the selected documents used scientifically-based research methods. The document, “What Content-Area Teachers Should Know About Adolescent Literacy,” is divided into two parts. The first section described key components of reading that are critical to the development of reading proficiency: decoding/phonemic awareness and phonics, morphology, vocabulary, fluency, and text comprehension. The second section described four other areas that are essential for helping adolescents achieve advanced levels of literacy: assessment, writing, motivation, and the needs of diverse learners.

The thoughtful, concise format of this document left this author with the feeling that “yes, it is possible to make interventions with struggling readers in the content-based classroom.” For each of the key components featured in the first section there is a section on what good readers do, challenges faced by readers, how instruction can help, with sub-headings of direct interventions teachers can implement in the classroom, and what types of information still need to be investigated through further research. Additionally, the appendix section of the document contained outlines for modeling strategies such as think aloud, and graphic organizers that are
appropriate for many interventions.

Another similar document “Improving Adolescent Literacy, Effective Classroom and Intervention Practices” was published in 2008 by the U. S. Department of Education, Institute of Education Sciences (IES). According to their introductory paragraph the IES publishes practice guides in education to bring forth the best practices available for practitioners. The work in this document is not rigorously researched, but instead is reliant upon the expertise of the authors. Once the document is prepared, it is then subjected to a thorough external peer review.

“Improving Adolescent Literacy, Effective Classroom and Intervention Practices” is broken into five main recommendations: provide explicit vocabulary instruction, provide direct and explicit comprehension strategy instruction, provide opportunities for discussion of text meaning and interpretation, increase student motivation, and make available intensive and individualized interventions with trained specialists. Each section is further broken down to include the level of evidence, that is, the level of importance to the student of conducting this recommendation in the classroom, a summary of the evidence supporting the recommendation, methods of carrying out the recommendations, and potential roadblocks and solutions.

One of the most useful parts of this guide for this author was the checklist included on pages eight and nine of the document. The checklist contained the recommendation being made and check-off boxes next to interventions to use in the classroom. The checklist is a quick guide to use to build interventions into lesson plans. Once again, this document showed that it is possible to build interventions into the middle school classroom successfully.

Fluency, comprehension, vocabulary, and motivation have been looked at as the four constructs of reading instruction for older students. Several ideas for implementation in the
content-based classroom have been examined. Some of the presented ideas seem more feasible than others. Some appear to require more work for implementation than others, and with some, it is difficult to know if they are truly as research-based as practitioners would like them to be before adopting them for use in the classroom. But adopting ideas for teaching constructs may not really be a choice we as teachers have. We need to find a way to help struggling readers. One of these ideas might be the answer for our classrooms.
Chapter III: Results and Analysis Relative to the Problem

While there are a few poorly designed research projects that have been conducted looking at teaching reading in the content-based classroom, there are many more journal articles that feature reading strategies that can be used in the content-based classroom. Many of these journal articles do not show that research has been done around the strategy, and therefore do not supply critical data to help the reader know that the strategy being promoted is research-based, but this author feels that several of these articles require perusal and evaluation. Readers might look at implementation of one or more of the strategies in their classroom, and perhaps conduct the research that is needed to accompany the strategies. Every strategy that has become a part of our classroom started somewhere. Someone, at some time, felt the strategy or idea to be important enough to implement the strategy into the classroom and conduct the research to show its usefulness. Many of the strategies featured in journal articles were discussed by authors who have been involved in other strategy research. Therefore, these strategy papers will be included in the results and analysis along with the research component. Who knows, research on some of these strategies may already be in the works.

Reading Fluency

Reading fluency is a construct that many people think “just happens.” Because fluency is the ability for readers to recognize words automatically and pay little attention to the mechanics of reading, little time has been spent developing interventions for this construct. A consensus from reading many articles caused this author to feel that many practitioners believe practice with word morphology and vocabulary will lend itself to increased fluency. Additionally, general recommendations surfaced in many reading guides that urged teachers to model fluent reading by
reading aloud to the class, and give students time to practice reading aloud, whether in pairs, small groups, or in the classroom (Harmon, 1998; Manset-Williamson & Nelson, 2005; National Institute for Literacy, 2007; Roberts et al., 2008h).

Reading Comprehension

Much of the literature focused on reading comprehension centered on teaching strategies to students so students have a tool bag of strategies to use when reading and comprehending text. Comprehension strategies that focused on understanding text structure through the use of strategies was highlighted by Williams et al. (2009) when they taught children to use compare and contrast and pro-con strategies. Manset-Williamson and Nelson (2005) gave students explicit instruction on reading strategies and used modeling and guided practice to encourage student use of strategies.

The use of teaching frameworks and graphic organizers were also highly encouraged by study authors. The PEP Road Map framework (Harmon et al., 1999; Katims & Harmon, 2000) incorporated several strategies into one with the use of note taking, the road map graphic organizer, group collaboration, and feedback. Collaboration was also encouraged by Gaskins et al. (1994) while students were working on project-based learning activities.

Teachers defining the concepts to be learned and developing graphic organizers that enhance those concepts is encouraged by McCoy and Ketterlin-Geller (2004), Sencibaugh (2008), and Wardrip and Tobey (2009). Harmon and Hedrick (2004) created a framework for concept learning and vocabulary in social studies called Zooming in and zooming out that relies heavily on visual images and a large classroom-sized organizer.

Self-questioning and predicting outcomes actively involves the student in the reading of the text. Kinniburgh and Shaw (2009) take self-questioning one step further by using questioning as part of Question-Answer Relationships. Students using QAR are taught to think about where the answer to a question might be and read critically as they look for the answer to the question. Once again, this framework relied heavily upon the teacher pulling key concepts from text and creating questions to guide student reading.

Comprehension of the material assigned for reading is critical if students are going to be successful in the classroom. Many students are good readers and do not appear to need interventions. Unfortunately, in many cases we are asking readers to read to learn, a skill that is not highly developed, even in some good readers. Therefore, giving them materials that will guide their reading and help them organize their thoughts can be extremely beneficial. There is a plethora of graphic organizers available in the form of frameworks, included with textbooks, and on many websites. Teachers need to spend time researching the variety of graphic organizers and decide which organizers work best with the concepts they are teaching. Then, as research shows, we need to start using the organizers with our students (Harmon, Katims, & Whittington, 1999; Katims & Harmon, 2000; Kinniburgh & Shaw, 2009; Wardrip & Tobey, 2009). If we can teach students reading strategies and guide their reading, student comprehension of material will start becoming more apparent in the classroom.

Reading vocabulary

If students are to learn two to three thousand new words a year, vocabulary instruction is an important part of any classroom instruction. There have been many studies conducted with the outcome of how not to teach vocabulary, and as many conducted to tell teachers how to teach
vocabulary. Many of the studies contradict each other. It is extremely easy to read one study as a teacher and get to the end thinking “oh dear, I've been teaching vocabulary all wrong” and then read the next study, get to the end and think “no, I've been teaching vocabulary just like this person recommends.” How can vocabulary teaching methods be both right and wrong? Much of the issue appeared to lie in the fact that teachers need to use a multidimensional approach to teaching vocabulary.

Incorporating word walls in the classroom is encouraged by Harmon et al. (2009), as is making your classroom a literacy-rich environment where students are constantly interacting with language and words (Harmon, 1998). Other ideas for incorporating vocabulary into the classroom involved using learning cycles where students become actively involved with the vocabulary in each of the phases of the cycle (Spencer & Guillaume, 2006).

Harmon, Hedrick, and Wood (2005) have put together a research-based overview of vocabulary teaching and learning in the content areas. Within this overview are many suggestions for teaching vocabulary to struggling readers in all content-based classrooms. Suggestions for teacher development are included as a means of preparing content-based teachers for the task of teaching vocabulary.

**Reading motivation**

What motivates a student to read? Taboada et al. (2009) looked at links between motivation and cognitive variables on reading comprehension. Their research found that motivated readers used reading strategies tend to be good readers. This author then asks, which came first - being a motivated reader who uses reading strategies, or being a good reader who uses reading strategies, therefore because the reader is a good reader they are motivated to read
more.

Motivation of students is a difficult construct to teach, and an even harder construct to measure. There are ways to motivate students to read with extrinsic rewards. Just ask any elementary teacher who has just finished reading month activities. This author found no research that spoke to motivating ideas. What she did find was the consensus that if you give readers the strategies they need to be successful readers, success will breed motivation and readers will read for learning.

There is still much to be learned in regards to teaching reading in the content-based classroom. Teachers need to feel that they are sufficiently informed about reading problems. Teachers need ideas of how to intervene with the struggling readers in their classroom. The teachers also need to understand reading strategies so they can use the strategies in the classroom, thereby helping the students become better readers. Finally, teachers who are comfortable with reading intervention use in the classroom need to step forward as educators and researchers. More research on teaching reading in the concept-based classroom needs to be conducted. Who better to conduct the research than those in the classroom with firsthand knowledge of the struggles students face on a daily basis?
Chapter IV: Recommendations and Conclusions

**Recommendations**

Reading to learn is a construct of reading that involves reading text and successfully deducing information from the reading. Reading to learn pushes the limits of many readers, especially those that were not fluent readers when they were learning to read. Teachers have the responsibility of making sure that each child can learn to read and read to learn. They must develop plans for the classroom that teach reading strategies and promote reading.

Teaching vocabulary as a part of reading appears to be a tricky undertaking in the classroom with varied “do this” and “do that” directions. Teachers still feeling that they would like something a bit more concrete to base vocabulary teaching on might like to check out Janet Allen's book *Words, Words, Word: Teaching Vocabulary in Grades 4 – 12*. Allen has taught vocabulary for many years, and like this author, was sometimes confused with the “this approach is best, no, this one is” literature available on vocabulary instruction. She took her confusion, did a wealth of research, and compiled a book with best practices for teaching vocabulary.

With that said, this author still feels as though something is missing. Many researchers have looked at interventions for special education students. Some of the special education students and interventions are incorporated into the general education classroom. More likely than not, the interventions are looked at in regards to special education students alone.

There is also not a set list of strategies that would prove useful in teaching students how to read to learn. Many strategies related to reading constructs are written about, but literature tends to be confusing with the idea of best practices. Actual research-based strategies to use in the general education classroom and content-based classrooms are rare. If reading for
information is as important as practitioners are led to believe, and this author believes this idea to be true, then practitioners need to take a critical look at where they are in teaching reading for information in the classroom, as well as how to move towards more research-based interventions. This author certainly did not find a set of research-based best practices to use in her science classroom when teaching students to read for information. She found plenty of ideas to work at incorporating, but no prescription for fixing the reading problem.

As teachers we must take on the responsibility of finding new ways to teach reading to learn in our classrooms. We must be willing to explore new frameworks on an intellectual level, and then, if deemed worthwhile, integrate the framework into the classroom. We must also be willing to be critical of ourselves and our classrooms as we record data from new strategy integration. Lastly, teachers have the responsibility of creating research-based best practices and sharing them with others.

More research needs to be completed. This author would like to see the following research study.

Areas for Further Research

Question: Does structured teaching of reading strategies create students who are better readers over a period of time?

Participants: Students in the general education/content-based classrooms, fourth grade through middle school (grades four through eight). All students who are normally in the general education/content-based classroom will be included in the study.

Methods of study: This proposal is for a longitudinal study of students moving through the general education and content-based classrooms grades four through twelve. From fourth
through eighth grade, students will be introduced to two comprehension strategies per year that can be used for reading for information. Teachers will emphasize these strategies in the year they are introduced, and teachers in later years will remind students of strategies previously learned, as well as introduce new strategies.

Comprehension strategies each year:

- Fourth Grade: Brainstorming, Skimming
- Fifth Grade: Compare and Contrast, Sequencing information
- Sixth Grade: Problem-Solution, Questioning
- Seventh Grade: Causation, Inferring
- Eighth Grade: Summarizing, Reflecting

All teachers in grade levels four through eight will be trained in recognizing each of the strategies and given research-based materials to use in the classroom to teach the strategies. Teachers will teach the strategies, and document the teaching, at least two times per marking period throughout the course of the study.

Students will be given the district-wide reading test at the beginning of each school year, at semester time, and again at the end of the school year. Scores on the reading test will be analyzed for student growth in reading over the course of the study. This can be done individually and as a class.

All teachers in the fourth through eighth grade levels will be asked to complete a questionnaire yearly on perceived student growth in reading comprehension skills.

Anecdotal evidence of student success will be collected. This evidence might include, but is not limited to, numbers of students using Title I and Title 7 services in the school, number of
students being referred for classroom behavior issues, and the number of students being referred to after school homework lab for additional help with reading concepts.

Summary and Conclusion

Reading is truly of major importance to each child and their success in school. Children who fail to learn to read, or later fail to read to learn information, put themselves at risk of becoming unmotivated learners who do the minimum to get by, or drop out of school because they find school to be too difficult to handle. As educators, whether general education or content-based, we have the responsibility of reaching each one of the children who come into our classroom. We are responsible for looking at each individual student and finding a way to help that student be successful. Constant searches for best practices in teaching students to read and process information is a major part of our job. It is not one that we can casually overlook and push off onto someone else's shoulders.
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