The Use of Nonlinguistic Representations in the Vocabulary

Development of Fifth Graders: A Simulated Study

Student Name

Western Connecticut State University

ED 501 Introduction to Research

Spring 2012

Abstract

As research supports, students with a strong vocabulary generally have better reading comprehension than those lacking adequate language skills. As a 5th grade teacher, I am always striving to improve the reading comprehension of my students so that they can be successful in an educational setting as well as their daily lives. I hope to learn effective strategies to promote general vocabulary development. In my 5th grade reading class, students acquire vocabulary both through pre-reading activities with teacher-chosen vocabulary words as well as self-identification during reading. After an assessment to collect data on their current retention of vocabulary from reading selections, I introduce nonlinguistic strategies through modeling and student practice in groups and individually. Students respond to a survey before, during, and after intervention to reflect on their confidence in acquiring new vocabulary and their understanding of available strategies. There is another assessment given after several lessons with new words to see if there is a difference in retention. I keep observations on the progress in behavior and approach to vocabulary when using nonlinguistic representations. It is found that students perform better on assessments after implementing nonverbal strategies.

Keywords: nonlinguistic representations, pictorial representations, vocabulary development

Overview

As educators, we strive to produce strong readers that interact with their text in meaningful ways and have accurate comprehension. In order to reach this standard, students need to have an excellent vocabulary base and a positive outlook toward learning new words. This study focuses on the effectiveness of using nonlinguistic representations to teach isolated vocabulary words and improve the students' attitude toward acquiring new language.

Literature Review

Vocabulary plays a large role in the reading comprehension abilities and the overall creation of an educated individual (Beck, McKeown, & Kucan, 2002). It's important to build this vocabulary base early in one's school career, but many schools don't seem to emphasize the importance, and many teachers aren't familiar with effective strategies (Beck, et al., 2002). Sadoski and Paivio (2001) revisit the dual coding theory (DCT) which states that the brain uses both verbal and nonverbal codes to store and understand language. This theory supports the use of nonverbal representations in order to retain new words. The idea of using nonlinguistic representations to illustrate content terms became popular when connected with note taking procedures (Marzano, Pickering, & Pollok, 2001) Marzano (2010) shares activities and context-based comprehension strategies that go beyond organization and content related vocabulary. Cohen & Johnson (2011), Naughton (2008), and Rezaee & Shoar (2011) have shared success in combining traditional linguistic approaches to vocabulary development and pictorial or kinesthetic models in order to motivate children

and build strong schematic connections to the language. Rupley (1999) also touts the success of using a word over many disciplines and in many different ways. Through graphic organizers and meaningful associations, students will have a deeper understanding of language. One obstacle for teachers that Graves (2011) points out is the lack of time to dedicate to language development. A picture can convey meaning in a very short amount of time and therefore may be the key to improving students' vocabularies in this time of jam-packed curricula and new expectations on teachers.

Rationale

For years, teachers have started to incorporate pictorial strategies into vocabulary development. Marzano, et al. (2001) presented a very manageable approach that lends itself well to concrete terms found in science and history classes. There seems to be a lack of research on using this technique for vocabulary found in novels. If using nonlinguistic representations to teach vocabulary creates deeper meaning for fifth graders in the content areas, then it should be a successful strategy for teaching vocabulary found in literature. If proven to be effective, this method can eventually lead to stronger reading comprehension and improve the way students interact with language.

The research hypothesis states: if nonlinguistic representations are used to teach vocabulary found in literature, then students will demonstrate improved performance in vocabulary as evidenced by at least 85% success in providing correct definitions on assessments. The null hypothesis states: if nonlinguistic representations are used to

teach vocabulary found in literature, then students will not demonstrate improved

performance on vocabulary assessments with any statistical significance.

Methodology

Participants

This action research study involves 12 fifth grade students from a small, rural

elementary school in Salisbury, CT. This heterogeneous class, although very bright,

has demonstrated a need for further vocabulary development during reading instruction.

There are 6 boys and 6 girls, and all are 10 to 11 years old. All students speak English

as their primary language, and 11 out of 12 students are Caucasian. This is a sample

of convenience as it is my current class.

Validity

In order to be sure that the results have internal validity, the data has been poly-

angulated through use of vocabulary assessments, reading comprehension

assessments, student surveys, and class observations. Member checking ensures that

the participants have been represented accurately. These results will have limitations

due to the very small sample size and possible biases.

Data Collection

Both quantitative and qualitative data are collected in order to get a full picture of

the effectiveness of the strategy. Quantitative measures include pretest and posttest

reading comprehension scores, three vocabulary quizzes, and the three Likert scale

survey results. Qualitative data are collected from my observations and reflections as

well as any additional written information given on the student surveys. Since this study takes place in my classroom, no funding is necessary.

Pre-Intervention Measures

Students have been assessed at their current level using a list of 5 vocabulary words from chapter 20 of *Blood on the River* (Appendix A) using conventional strategies such as writing the dictionary definition and using it in a sentence. They also completed a short comprehension check of 5 questions for chapter 20 to set a baseline (Appendix B). A Likert scale survey of 5 questions (Appendix C) was distributed in order to assess current confidence levels regarding how the students learn new vocabulary words and their knowledge of available strategies.

Interventions/Procedure

Interventions began with the teacher introducing the note sheet format and handing out a double-sided template (Appendix D) for their use on chapter 21 of their current novel, *Blood on the River* by Elisa Carbone. The teacher modeled looking up words in the dictionary and, using the smart board with a note page template, how to write a "meaning" rather than a "definition." This "Think Aloud" allows students to understand the reasoning behind the steps taken and self-questioning techniques. In the "connections" section of the note sheet, secondary meanings, a sentence, or a personal connection to the word are written. The students were excited a see the picture section of the note page, and the teacher explained that this section could represent a variety of representations. For this particular list of vocabulary words, the teacher shared an assortment of nonverbal strategies shown in Table 2.

Table 2: Modeled Strategies for Chapter 21

Vocabulary Word	Nonlinguistic Representation
Imposing	Kinesthetic - Hands up over their heads
Marionette	Video - Pinocchio Marionette on www.YouTube.com
Smugly	Picture online - Emoticon AND Kinesthetic - Attempt a smug face & tone of voice with your partner
Bodice	Picture online - preselected photos of a bodice from medieval and Victorian times
Vigil	Pictures online - one small bedside vigil, one large candlelight vigil

The students drew a sketch to represent what they saw or did and wrote "video," "photo," or "act out" to help them remember the demonstration. As they sketched, the teacher encouraged them to develop simple, quick, but meaningful pictorial representations. Throughout these teacher-led strategies, students shared ideas and connections.

For the five new vocabulary words from chapter 22, students work in groups of four. The teacher explains that they are to produce a "picture" or "act out" representations for their words. After completing the note sheet for their five words, the class meets at the rug to share their vocabulary with nonlinguistic representations, and the teacher shares a video clip and photo to enhance comprehension. She explains that these resources will not always be easily available to them in school, but learners may find them on their own time when trying to interpret a vocabulary word.

At this point, students are given the same survey (Appendix C) again to check progress in how they view vocabulary development. They take a second vocabulary assessment on chapter 22 (Appendix E) in order to assess improvement.

Slowly removing the scaffolding, students work in partners for chapter 23 and independently for chapter 24 to show them that they are able. Throughout this process, the teacher kept observations on how the students interacted with the words so that adjustments could be made if necessary. The teacher looked for how often they participate in their group, how on-task they were during note taking, and how well they understood the words in context during reading.

Finally, students were given the survey a third and final time, took a third vocabulary quiz (same format) on chapter 25, and a second reading comprehension check also on chapter 25.

Analysis of Results

The pre-assessments show that there is a need for further vocabulary development. The results of the initial vocabulary assessment (Appendix A) showed a range of 60 (40% to 100%) and an average of 63.33% (Table 5). This certainly shows a need for different teaching techniques. The students collectively scored an average of 80.8% on this first reading comprehension check of 5 questions (Appendix B, Table 6). Although this is not significantly below the expected 85%, it is important to establish a baseline. As you can see in Table 1, the results from the first survey indicate that students don't feel they have strategies and resources that help them retain vocabulary.

Table 1: *Survey Results 1*

	Question 1	Question 2	Question 3	Question 4	Question 5	Total	Average
Survey Results: 1							
	I enjoy learning new words.	Learning new words comes easily to me.	I know several strategies to help me learn new words.	I always remember the meaning of new words.	The vocabulary note pages in class help me.		
Student 1	1	4	3	4	1	13	2.6
Student 2	5	3	1	3	2	14	2.8
Student 3	1	1	1	1	1	5	1
Student 4	4	2	2	2	2	12	2.4
Student 5	4	5	3	2	3	17	3.4
Student 6	3	3	3	3	3	15	3
Student 7	3	4	4	4	3	18	3.6
Student 8	3	5	3	5	3	19	3.8
Student 9	4	2	2	2	3	13	2.6
Student 10	2	3	3	2	2	12	2.4
Student 11	1	3	2	2	2	10	2
Student 12	5	3	2	3	2	15	3
Total	36	38	29	33	27		
Average	3	3.166666667	2.416666667	2.75	2.25		2.71667

The results of the second survey show a marked increase in questions #3 and #5, which shows that students now feel they have resources to help them (Table 3). The average responses improved by .82 points on a 5 point scale. The second round of vocabulary assessments increased from 63.33% to an average of 80% (Table 5), which shows that the interventions are working and should be continued.

Table 3: *Survey Results 2*

	Question 1	Question 2	Question 3	Question 4	Question 5	Total	Average
Survey Results: 2							
	I enjoy learning new words.	Learning new words comes easily to me.	I know several strategies to help me learn new words.	I always remember the meaning of new words.	The vocabulary note pages in class help me.		
Student 1	1	4	5	4	2	16	3.2
Student 2	5	3	3	3	4	18	3.6
Student 3	1	1	3	1	4	10	2
Student 4	4	2	4	2	5	17	3.4
Student 5	4	5	5	3	5	22	4.4
Student 6	3	4	5	3	4	19	3.8
Student 7	3	4	5	4	4	20	4
Student 8	3	5	5	5	3	21	4.2
Student 9	4	2	4	2	4	16	3.2
Student 10	3	3	4	2	3	15	3
Student 11	3	3	4	2	5	17	3.4
Student 12	5	3	5	3	5	21	4.2
Total	39	39	52	34	48		
Average	3.25	3.25	4.333333333	2.833333333	4		3.53333

In order to identify improvement in vocabulary scores, I compared the means and standard deviations in three assessments of the same format (Table 5). The class mean of the pre-assessment was 63.33% with a standard deviation of 21.34. Only 42% of the class received a score of 80% or higher. This shows a need for improved instruction since we strive for 85% proficiency. The large standard deviation exhibits a wide range of scores. After intervention, the third vocabulary assessment had a mean of 85% with a standard deviation of 14.43. An improved 83% of the class received a score of 80% or higher. The standard deviation shrunk by 7 because the range in scores decreased from 80% to 40%. The mean difference for the first and third tests was 21.67, and the p-value was 0.000157178. This clearly rejects the null hypothesis as it is less than 0.05 as accepted in the education field. Based on these results, it is certainly apparent that students retain vocabulary better using the strategies presented in this study.

Table 5: *Vocabulary Results*
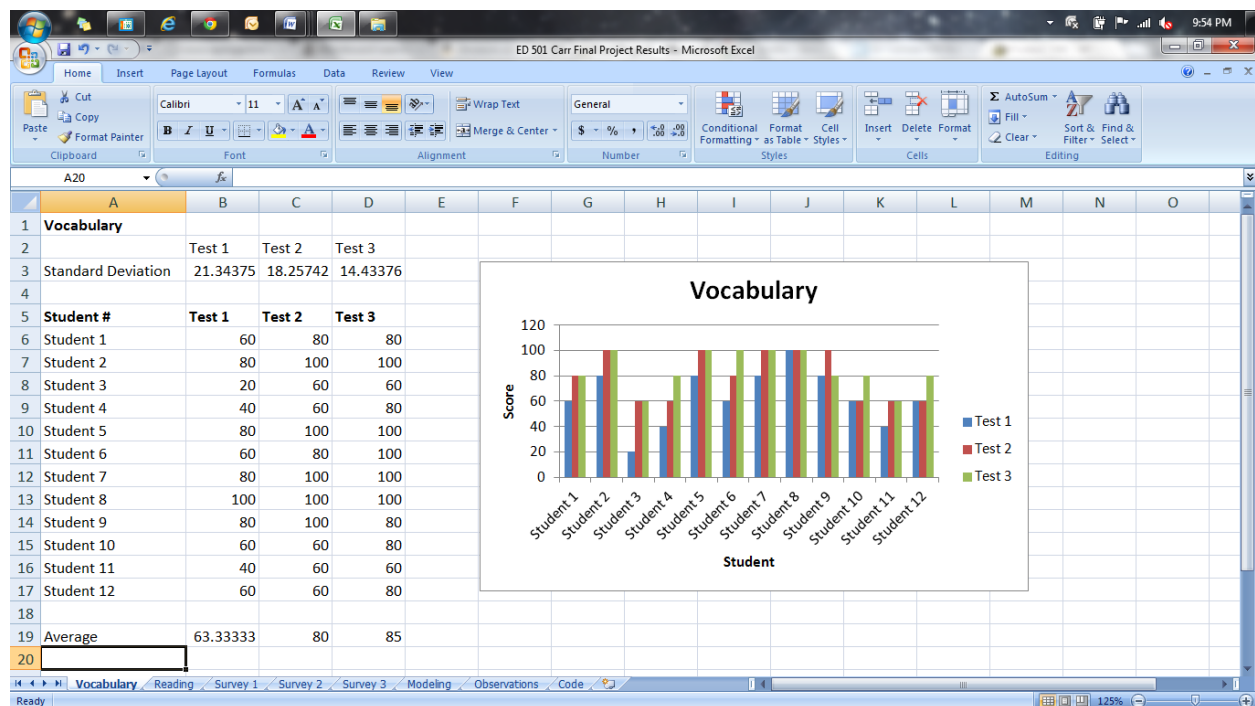
The paired T-test on two reading comprehension assessments (Table 6) yielded a t-statistic of 8.33, which shows a significant increase in test scores. With a P-value of 0.017, there is statistical evidence to support these interventions because it is less than .05, which is accepted in education. The average of the second round of tests was 89.12%, which has certainly surpassed the goal of 85%.

Table 6: *Reading Comprehension Results*

	A	B	C	D	E
1	**Reading Comprehension**				
2		Test 1	Test 2		
3	Standard Deviation	10.3749163	6.40095479	9.860133	
4					
5	**Student #**	**Test 1**	**Test 2**	**Difference**	
6	Student 1	80	90	10	
7	Student 2	90	100	10	
8	Student 3	60	80	20	
9	Student 4	80	90	10	
10	Student 5	90	90	0	
11	Student 6	80	100	20	
12	Student 7	90	80	-10	
13	Student 8	100	90	-10	
14	Student 9	80	90	10	
15	Student 10	70	90	20	
16	Student 11	70	80	10	
17	Student 12	80	90	10	
18	**Average**	**80.8333333**	**89.1666667**	**8.3333333**	
19			(t stat)		
20	Paired T Test	0.01718049			

Tabulation was the best approach for evaluating the three surveys (Table 1, Table 3, & Table 4). Overall, the average of the class's responses improved from 2.71 to 4.32 where 5 is the maximum. Looking at question columns 3 and 5, there is a large discrepancy between the 1st and 3rd surveys. The average for question 3 raised 2.58 points and the average for question 5 raised 2.66 points – this is significant on a 5 point scale.

Table 4: *Survey Results 3*

	Question 1 I enjoy learning new words.	Question 2 Learning new words comes easily to me.	Question 3 I know several strategies to help me learn new words.	Question 4 I always remember the meaning of new words.	Question 5 The vocabulary note pages in class help me.	Total	Average
Student 1	2	4	5	4	4	19	3.8
Student 2	5	4	5	3	5	22	4.4
Student 3	3	2	5	2	5	17	3.4
Student 4	5	4	5	3	5	22	4.4
Student 5	5	5	5	4	5	24	4.8
Student 6	4	4	5	3	5	21	4.2
Student 7	3	5	5	5	5	23	4.6
Student 8	3	5	5	5	5	23	4.6
Student 9	5	4	5	3	5	22	4.4
Student 10	3	4	5	2	5	19	3.8
Student 11	5	3	5	4	5	22	4.4
Student 12	5	5	5	5	5	25	5
Total	48	49	60	43	59		
Average	4	4.083333333	5	3.583333333	4.916666667		4.31667

Observations in class (Appendix F) included increased participation (9 cases to 17 cases) and fewer instances of disruptive behavior (5 cases to 3 cases). The on-task behavior increased from 2 to 8 cases, and there were 6 times where students acted confident.

When comparing the data, all sources show an improvement in vocabulary development and self-assessment of knowledge. After interventions, the vocabulary test results improved overall by 21.67% and the reading comprehension improved 8.33%. Both of these assessments show higher than 85% proficiency and had statistical evidence of success with p-values less than .05. The average survey score improved 1.6 points overall. 100% of the students noted improved confidence in strategies and the use of their note pages. Observations show an increase in good behavior and decreased poor behavior.

Discussion

It is apparent that there is a strong relationship between using nonlinguistic representations and students' positive attitudes toward learning new vocabulary based on a 21.67% increase on vocabulary assessments and 100% increase on the self-assessed student surveys. According to classroom observations and survey results, students feel more confident and participate more in vocabulary activities when they draw pictures for corresponding words. There does not appear to be a large increase in reading comprehension after the given strategies, but this may be due to the strong comprehension level prior to instruction based on one small assessment

In the future, I will assess their reading comprehension levels using an array of assessments including standardized tests such as the Connecticut Mastery Tests and benchmark assessments like Aims Web and Blue Ribbon in order to get a more accurate portrait of student performance. There was a steady incline in vocabulary test scores as strategies were introduced and practiced. If these results could be recreated with a larger sample, then it should be accepted that using nonlinguistic representations as a strategy to teach vocabulary in literature has a positive effect on students' performance. I would recommend that larger studies (involving populations greater than or equal to 100 middle grade students) across many schools be conducted. If results replicate the findings here, then it should be accepted that nonlinguistic representations positively impact students' understanding of vocabulary found in literature.

Project Management Plan

Candidate Name: Student Name   Date: March 6, 2012

| Planning Stage | Acting Stage | Developing Stage | Reflecting Stage |
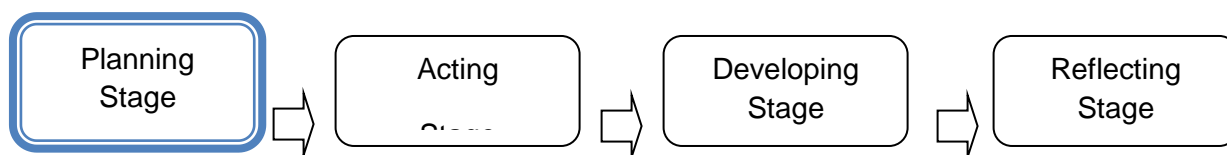
Project Management Plan

A Project Management Plan (PMP) will be submitted in advance of the Final Project. It will help you narrow your ideas and will serve as an outline for the Final Project. I am assuming most of you will be doing an Action Research project, however, if you want to focus on a strictly qualitative or quantitative study, please see me as the PMP will be slightly different.

A project management plan steps your thought the thought and decision making process as you begin to identify an area of interest for your study. It also helps you separate out important elements of quality research.

The Project Management Plan will be posted individually as an attachment in **Assignments**. Be sure to put the appropriate titles in the subject line, followed by your last name. Example: **ED501_PMP_Rabe**.   Your Final Project Research Plan (or actual study if a clinical setting is available) will be presented to the class through the use of 6 – 8 PowerPoint slides.

Identifying and Limiting the Topic

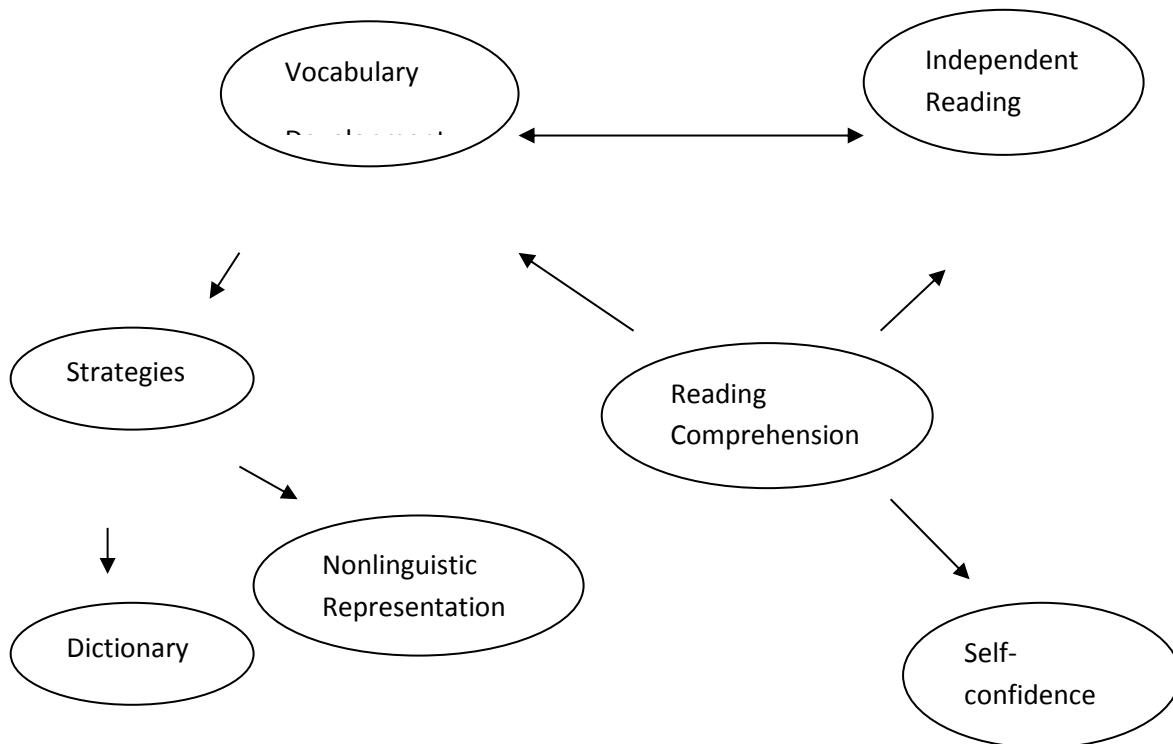| 1. What type of data are you interested in collecting about your students or their learning?	2. What will the information you collect tell you?
- Comprehension levels (quantitative)	- How vocabulary is connected to comprehension
- Vocabulary levels (quantitative)	- How students feel about learning vocabulary
- Vocabulary retention (quantitative &	- Best strategies for effectively teaching

qualitative) - Best way to teach vocabulary (qualitative & quantitative)	vocabulary
3. What else would you like to know about what is going on in your classroom? - How much are students reading on their own? - Confidence levels and how that pertains to academic success - What type of practice is effective practice?	4. How could you collect this information? - Pre-tests & post-tests - Introducing new strategies/observations - Surveys - Journals - Interviews

From the previous page, list possible research projects

1. What impacts reading comprehension?
2. What are the best strategies for teaching vocabulary?
3. Will pictures help students learn vocabulary?
4. How does self-confidence directly affect academic success?

5. How can educators better encourage independent reading?

Web these topics into a logical relationship using a Mind Map or a Concept Map

Vocabulary
Development

Independent
Reading

Strategies

Reading
Comprehension

Nonlinguistic
Representation

Dictionary

Self-
confidence

Select <u>one</u> idea to pursue in your research:

- Using nonlinguistic representations as a strategy for teaching vocabulary

---

Developing a Research Question

What problem (or issue) do you see with your students or their learning? Define.

I feel that the students don't retain vocabulary words from the novels we read as much as their

science and social studies terms. Since I use pictures and other nonlinguistic representations for these content-related terms, then perhaps they would work in reading class.

Turn your problem into a question.

List your research question(s): If you have many ideas, narrow your focus and ask one or two research questions.

Will drawing/seeing nonlinguistic representations increase 5th graders' comprehension of vocabulary found in literature as seen on a standard vocabulary assessment?

Terms: Define the technical terms or specialized acronyms connected to your research question that will require a definition. Write term(s) below and define.

Nonlinguistic Representations: A representation of information/knowledge other than language/words (pictures, models, movies, etc.).

Dual Coding: The use of both verbal and non-verbal representations to categorize information/knowledge.

Reviewing the Related Literature

List the sources you have in an annotated bibliography. For this project you should have at least 6-10 sources, this means you should review 12 – 20 sources. You may use a chapter(s) from your textbook. Definition of annotated bibliography and examples (from OWL at Purdue): http://owl.english.purdue.edu/owl/resource/614/01/.

Although your final project will include a standard reference list in APA Style, you will find that the annotated bibliography will help you organize as you write your review of the literature.

Annotated Bibliography

Cohen, M. T., & Johnson, H. L. (2011). Improving the acquisition of novel vocabulary through

the use of imagery interventions. *Early Childhood Education Journal,* 38, 357-366.

This primary source evaluated the effectiveness of linking vocabulary with images. On a broader journey to improve reader comprehension, they focused on vocabulary, a necessary tool for creating proficient readers. Using three different strategies on the same population of 15 second graders, Cohen and Johnson were able to analyze the discrepancies in outcomes for the study.

Graves, M. F. (2011). Vocabulary instruction: Matching teaching methods to the learning task

and the time available for instruction. *California Reader*,44 (3), 4-8.

This short article reiterates the most effective (and time-consuming) strategies for teaching individual vocabulary words but states the unfortunate time restraints that teachers have. The example used in the article illustrates how fast and effective pictures can be for word association.

Marzano, R. J. (2010). *Teaching Basic and Advanced Vocabulary: A Framework for Direct Instruction*. Alexandria, VA: Heinle and Association for Supervision and Curriculum Development.

This book lays out a specific note-taking format that highlights nonlinguistic representations for new vocabulary words. This appears to apply to content-specific words, but formats can be stretched.

Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001).*Classroom instruction that works:*

Research-based strategies for increasing student achievement. Alexandria, VA: Association for Supervision and Curriculum Development.

This book does not solely focus on vocabulary development, but Marzano does highlight the importance of nonlinguistic representations in a student's understanding of language. According to the book, nonlinguistic representations include pictures, pictographs, and kinesthetic activities among others.

Naughton, V. M. (2008). Picture it!. *Reading Teacher*, 62(1), 65-68.

This article focuses on the importance of picturing a story for comprehension but also specifically targets vocabulary. By picturing new words, the semantic maps and schema will further understanding.

Rezaee, A. A., & Shoar, N. S. (2011). Investigating the effect of using multiple sensory modes of

>   glossing vocabulary items in a reading text with multimedia annotations. *English
>   Language Teaching*, 4 (2), 25-34.

>   This study on acquiring foreign language supports the use of pictorial representations but states that this is mainly due to the concrete nature of that vocabulary. Although this study was based on adults, it is still interesting to note that those who received video clips did best on the assessment, pictures came in second, and only words did the worst.

Rupley, W.H., Logan, J. W., & Nichols, W. D. (1999). Vocabulary instruction in a

>   balanced reading program. *The Reading Teacher*, 52 (4), 336-346.

>   This article shares many strategies for developing vocabulary. One relevant idea was to use the word in many ways over a variety of disciplines, and this directly applies to nonlinguistic representations. Also, it highlights how nonverbal approaches such as kinesthetic associations, images, smells, etc. help students to sort and store words appropriately which creates depth. Graphic organizers are also emphasized.

Thinking and Planning… What other sources will you need to conduct your study? How will you locate them?

- More information on dual coding – I will ask for help at the WCSU library or try deeper research online
- More information on developing general vocabulary (not content or foreign language) – I will check my school's professional library as well as WCSU

Developing the Research Hypothesis

A simple question about the relationships between or among several variables (constructs) develops into a sense of the expected answer or a prediction of the expected relationship. It is written as an affirmative statement.

Research hypotheses are the specific testable predictions made about the independent and dependent variables in the study. Usually the literature review has given background material that justifies the particular hypotheses that are to be tested. Hypotheses are couched in terms of the particular independent and dependent variables that are going to be used in the study.

What is the Research Hypothesis:

If nonlinguistic representations are used to teach vocabulary found in literature, then students will demonstrate improved performance in vocabulary as evidenced by at least 85% success in providing correct definitions on assessments.

What is the Null Hypothesis (dependent on the research methodology selected)?

If nonlinguistic representations are used to teach vocabulary found in literature, then students will not demonstrate improved performance in vocabulary with less than 85% success in providing correct definitions on assessments.

What is the Alternative Hypothesis? (dependent on the research methodology selected)?

If nonlinguistic representations are used to teach vocabulary found in literature, then students will demonstrate improved performance in vocabulary as evidenced by at least 85% success in providing correct definitions on assessments.

Thinking Through What You Want to Study

What type of research is a match for your research question(s) and research hypothesis?

Action research will be used for this question – both qualitative and quantitative data will be collected.

Reference Document: Choosing an Appropriate Method of Research

Developing a Research Plan

The Study Sample

Who will participate in the study? 5th grade students at Salisbury Central School
How many participates will be in the study? 12
How did you determine the sample size? This is a sample of convenience as it is my current class.
What type of sampling will be used? Sample of convenience
If using inferential statistics, what is the confidence interval? Is this sufficient? I will run the means and standard deviation to see if there is growth, and a 95% confidence interval will be used. This is certainly sufficient to show a strong relationship between the intervention and student improvement.

Validity

How will you address **internal** validity? (The degree of confidence in concluding the causal relationship among the factors researched by eliminating the alternative hypothesis) - Triangulation of data: I will collect multiple data sources in order to get a true representation. - Member checking: After collecting and analyzing the data, I will check with participants to ensure that they are represented accurately.
What are the threats to **internal** validity? - Testing: There are always variables in pre- and post-test comparisons. - History: Students may have had prior experience with the intervention.
External Validity: What is the extent to which research findings are generalizable to a broader group? - Interaction: The sample is my personal class, and although I will try to be objective, there may be biases. - This is a very small sample size

Data Collection Procedures

What type of statistical instrument will you be using in your study?

- Quantitative instruments: survey, pre- and post-tests, comprehension tests
- Qualitative instrument: observations on how students approach their vocabulary words and their confidence as perceived by me, the teacher

What is the manner in which your data will be collected and how often will data be collected?

- My class of 12 students will be assessed at their current level using a list of five vocabulary words from their reading using conventional strategies such as writing the dictionary definition and using it in a sentence.
- There will also be a short reading comprehension check for that given chapter to set a base-line.
- A Likert scale survey will be distributed in order to assess current confidence levels regarding how the students learn new vocabulary words and their knowledge of strategies available. There will also be an open-ended question asking students to share how they feel about learning and retaining new vocabulary.
- Interventions will include teacher modeling of drawing pictures, kinesthetic activities, and short video clips to better understand a list of vocabulary words from their novel. Led by the teacher, students will keep note pages on five new words combining conventional methods with new nonlinguistic representations.
- At this point, students will be given the same survey to check progress in how they view vocabulary development. Another list of five words will be given and students will work in groups and then finally, individually to develop their note pages using pictures and kinesthetic actions to reinforce definitions.
- Throughout this process, I will be conducting formative assessments and keeping observations on how the students interact with the words so that I can best convey this concept. I will be looking for how often they participate in their group, how on-task they are during note taking, and how well they understand the word in context during reading.
- Finally, students will be given the same survey a final time, take a vocabulary quiz (same format), and a reading comprehension check. I will analyze the results in order to find trends and determine the outcomes of the interventions.

Analyzing the Data
How will the data be analyzed? - Tabulation on three rounds of Likert scale surveys - Compare the means and standard deviations of the 3 vocabulary assessments (common format) - A repeated-measures paired t test is appropriate to compare the means of the two reading comprehension tests to evaluate the effectiveness of the intervention. - Coding Scheme on observations
How will you determine what these data suggest? - Based on the analyzed data and the confidence interval, it will be apparent whether the difference between scores is significant enough to support the intervention.

Application of the Findings
Who is the intended audience? My colleagues at Salisbury Central School – it will be most relevant to grades 3-8.
How might you plan to apply these data? What is you plan of action? I will implement the strategy immediately if proven to be effective.

References

Beck, I.L., McKeown, M.G., & Kucan, L. (2002). *Bringing words to life: Robust*

    vocabulary instruction. New York: Guilford.

Cohen, M. T., & Johnson, H. L. (2011). Improving the acquisition of novel vocabulary

    through the use of imagery interventions. *Early Childhood Education Journal,* 38,

    357-366.

Graves, M. F. (2011). Vocabulary instruction: Matching teaching methods to the

    learning task and the time available for instruction. *California Reader,*44 (3), 4-8.

Marzano, R. J. (2010). *Teaching Basic and Advanced Vocabulary: A Framework for*

    Direct Instruction. Alexandria, VA: Heinle and Association for Supervision and

    Curriculum Development.

Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001).*Classroom instruction that*

    works:Research-based strategies for increasing student achievement.

    Alexandria, VA: Association for Supervision and Curriculum Development.

Naughton, V. M. (2008). Picture it!. *Reading Teacher*, 62(1), 65-68.

Rezaee, A. A., & Shoar, N. S. (2011). Investigating the effect of using multiple sensory

    modes of glossing vocabulary items in a reading text with multimedia

    annotations. *English Language Teaching*, 4 (2), 25-34.

Rupley, W.H., Logan, J. W., & Nichols, W. D. (1999). Vocabulary instruction in a

    balanced reading program. *The Reading Teacher,* 52 (4), 336-346.

Sadoski, M. (2005). A dual coding view of vocabulary learning. *Reading & Writing*

Quarterly, 21, 221-238.

Sadoski, M. & Paivio, A. (2001). *Imagery and text: A dual coding theory of reading and writing.* Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Appendix A

Name _____   Date _____

Vocabulary Assessment 1

Chapter 20

Directions: Please write the appropriate term next to its definition.

ridicule
chalice
cicadas
wary
coronation

1. _____ - the ceremony at which a sovereign is

    crowned

2. _____ - to make fun of or laugh at,

    especially unkindly or contemptuously

3. _____ - a drinking goblet

4. _____ - any of various large insects

    characterized by thin wings and a shrill noise

5. _____ - on watchful guard against threat,

    danger, or trickery

Appendix B

Name _____   Date _____

Reading Comprehension Check

Chapter 20

Please answer the following questions to the best of your ability. Number 5 is the only question that requires full sentences.

1. Captain Smith asks Samuel to bring his armor and sword with him to the village because he is:

    a. Hoping to teach Samuel more sword fighting strategies
    b. Nervous about how Chief Powhatan will receive them
    c. Worried about the natives from the Warraskoyack village
    d. Planning an attack on the village of Werowocomoco

2. What is the main reason for traveling to the native village?

    _____

3. Once at the village, the colonists were afraid they were being attacked, but it was _____.

4. What is the important difference that makes the people of Werowocomoco healthier than those at Jamestown? _____

5. Do you think Samuel would like to live at Werowocomoco? Please use several examples from the chapter to support your answer.

_____

_____

_____

Appendix C

Student # _____   Date _____

Survey Questionnaire

The purpose of this questionnaire is to help your teacher best prepare lessons to meet your needs; it will not affect your grade in any way. Please respond to each statement as honestly as you can by circling only one number for each statement using the following scale:

1	2	3	4	5
Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree

1. I enjoy learning new words.   1 2 3 4 5

2. Learning new words comes easily to me.   1 2 3 4 5

3. I know several strategies that help me to   1 2 3 4 5
learn new words.

4. I always remember the meaning   1 2 3 4 5
of new words.

5. The vocabulary note pages in class   1 2 3 4 5
help me.

Please share any additional thoughts you have on learning new words.

_____

_____

_____

_____

Appendix D

Vocabulary Word	Meaning (definition in own words)	
	Connections and/or sentence	Picture

Appendix E

Name _____   Date _____

Vocabulary Assessment 2

Chapter 22

Directions: Please write the appropriate term next to its definition.

vessels
wily
communal
hominy
smoldering

1. _____ - hulled kernels of dried corn, often
   ground and cooked with water

2. _____ - a structure designed for traveling on
   water; large boat

3. _____ - belong to members of a group;
   public

4. _____ - to burn slowly and with smoke, but
   little or no flame

5. _____ - cleverly deceitful; tricky; cunning

Appendix F

Observations: Chapter 20

- Students are given 5 vocabulary words from chapter 20 in *Blood on the River* that they must know for an assessment.
- They work in 4 groups of 3 to look up the definitions in a dictionary.
- ==Two students in Group 1 start to discuss a video game== as the ==third looks up the first word==.
- ==Group 2 is on task and sharing responsibilities.==
- ==One student in Group 3 has gone to the bathroom and gotten a drink within the first 5 minutes of work==.
- ==One student in Group 4 is looking out the window==, ==one is finding their notebook==, and ==one student is looking up the word==.
- Students gather at the rug to share their findings.
- Teacher asks for the meanings of the 5 words.
- ==One student says that the girl next to her share for their group because she's smart==.
- Looking around at the notebooks, ==only 8 out of 12 have all 5 definitions written down==.
- Many students needed to squeeze their definitions into a small space because they only skipped one line.
- It is apparent that the "spokesperson" for each group is the ==only one that has an understanding of the meanings==.
- I can see that students ==also struggled with some of the words used in the dictionary meanings==.

Observations: Chapter 25

- ==Students get out their note sheets before teacher even gives the list of words==.
- Split into groups of 3, the class is given a new list of 5 vocabulary words from chapter 25 to learn.
- ==The students in Group 1 look up the first word in the dictionary together.==
- ==The students in Group 2 look up the words together== and are confident in the order of events.
- In Group 3, ==one student uses the dictionary== while ==the rest of the group chats about their soccer game at recess==.
- In Group 4, ==two students look up the word== while ==one is in the bathroom==.
- As the word is found by each group, ==students begin to write the meaning==; 3 out of 4 groups discuss and agree on a "meaning" ==and 1 group copies the definition==.
- ==All groups decide to use the word in a sentence==, and 1 group also adds a personal connection.
- The "leader" in 2 of the groups tries to keep their group on task and offers their definition to be copied by slower writers.
- ==All students are on task when discussing what to draw.== There is ==one disagreement on what to draw.==
- Teacher reminds the students that they do not need matching pictures.
- Students ==draw pictures but need to be reminded to "sketch"==.
- Group 2 decides to ==add a movement for "foolery" and "seething".==
- Students are invited back to the rug to share vocabulary.
- ==All but 3 students are excited to share what they found/drew==.
- Teacher gives feedback on effectiveness of pictures.

Code:	
==On-task behavior==	==Off-task behavior==
==Confident==	==Insecure==

Appendix G

Name _____   Date _____

Vocabulary Assessment 3

Chapter 25

Directions: Please write the appropriate term next to its definition.

intricate
calloused
foolery
seething
naive

1. _____ - simple, natural, and unsophisticated

2. _____ - a silly or comical action or thing

3. _____ - hardened; thickened

4. _____ - having many complexly interrelated

    parts, elaborate

5. _____ - to be exceptionally excited or

    disturbed, as by anger

Appendix H

Name _____   Date _____

Reading Comprehension Check

Chapter 25

Please answer the following questions to the best of your ability. Number 5 is the only question that requires full sentences.

1. Before he left, Captain Smith gave Samuel the advice to

   _____ in order to make things better.

2. Captain Ratcliffe plans to take fifty men on a trip because they're going to:
   a. Build another fort
   b. Attack the natives
   c. Trade with the natives
   d. Find a nicer place for the gentlemen

3. In order to survive the winter, many settlers are

   _____.

4. What is the main reason that Ann doesn't want to leave Jamestown?

   _____

5. Why does Samuel make the decision to steal a baby? Please use several examples from the chapter to support your answer.

_____
_____
_____
_____
   _____