

EFFECT OF SPIRAL VOCABULARY REVIEW ON TEST SCORES  
AT A WESTERN WASHINGTON MIDDLE SCHOOL

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## **Abstract**

The purpose of this research project was to study how spiral review tasks effect student performance on end of unit vocabulary tests. Every Wednesday a vocabulary test is given during the humanities block periods. The vocabulary test is a compilation of all of the words learned from the prior week. One new vocabulary word is given each day and no review is conducted. This study was conducted to see if spiral review of the vocabulary words learned would increase test scores.

Data was collected in the form of three pre spiral review intervention tests and three tests during the spiral review. Over the course of four months, the students completed three tests before the spiral review intervention and three tests during the spiral review intervention. During both the pre and post intervention, new vocabulary words were given to students using the same method they have been using all year. The method is to show the students the word, a picture, and a short sentence to describe the word. Students are then to conclude the part of speech and the definition of the word. After students have guessed the correct part of speech and definition, students use the vocabulary word in a sentence. All vocabulary work is kept in student's individual vocabulary notebook. The difference of how the information was given to students during the intervention is during pre intervention I only gave a new vocabulary word each day (no review was conducted), and during the intervention I reviewed all of the prior weeks vocabulary words out loud using sentences, stories, and real life connections for the students.

The results of this research show that 93% of the students improved their average test scores during the spiral review intervention.

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## **Introduction**

Reading and writing skills are vital in education. It is essential for students to be able to recall prior skills that have been taught and apply them in a variety of circumstances. Mastering these skills will not only help students in their future education, but it will also help them in everyday life.

Professional athletes do not cram their skills in the day before their big performance. They master their craft through hours of repetition, constantly breaking down their fundamental skills vying for constant improvement. By embedding the importance of review in students, they too can become masterful.

In recent conversations with public school teachers it has been brought to my attention that a major concern in core classes is that students are forgetting prior-learned material. The skills that were being forgotten in order to perform the daily knowledge points, as outlined by the Washington State Office of the Superintendent Instruction, include: “[demonstrates understanding of different purposes for writing; analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details; analyzes and selects an effective organizational structure and/or examples; uses a variety of sentences, apply a variety of strategies to comprehend words and ideas in complex text” (OSPI 2011)]. These knowledges and skills are not only important to successfully completing the 7th grade, but imperative skills the students are expected to demonstrate on the Measurement of Student Progress (MSP) in the spring (OSPI 2011). These concerns lead led this research project.

This project will focus on daily spiral review that will incorporate past and present vocabulary words (a review method that covers previous and current material).

Specifically, the spiral review tasks will combine the word of the day and the previous week's vocabulary words. The focus will be on improving test scores and confidence in standardized testing through constant spiral review of key vocabulary words. This action research project provides ongoing growth and improvement opportunities for both the student and the teacher.

### **Literature Review**

The literature review is grouped into three sections. The first section is geared toward high-stakes testing and the importance of review in the classroom. Authors in this section talk about how their research has found that teacher's curriculum is being driven by high-stakes testing and instead of the students and the teacher driving the learning experiences, the teachers are being forced to teach to the test. The second section sheds light on student performance on tests and the importance of students being comfortable, familiar, and confident with the testing material. The last section focuses on the teacher's performance and awareness of students needs, specifically during testing.

#### *High-Stakes Testing and The Importance of Review:*

Many researchers have looked into the effects of study strategies and test taking strategies on students' academic performance. Because of increased emphasis on educational accountability, comes pressure to raise test scores. Chittoran and Miles say that with this pressure, the role of instructional preparing for testing has come more important for class examinations, as well as for standardized examinations.

Ensook, Sas, M., & Sas, J.C. concluded from their study that when preparing for tests, participants used various strategies, managed their study environments, and were aware of their motivational concerns. Students articulated test preparedness in terms of

their awareness in the cognitive, emotional and motivational areas. Understanding the material and not just knowing or memorizing the material proved to give students motivation and decreases test anxiety.

Kontovourki & Campis (2010) discuss the importance to prepare students for high-stakes testing. They add that a large part of test preparation is the way that teachers prepare the curriculum for the students. Kontovourki & Campis offer five characteristics of action to prepare students for tests.

They include:

1. Collaborate with one another to decide what works best for your students.
2. Think about the skills that particular tests takers need to master.
3. Review past tests and use them to design your own test questions in a similar format. Use test questions as practice to give students as much exposure as possible to the test.
4. Put your personal spin on test preparation and try to make it fun.
5. Help your students develop as critical test takers (Kontovourki & Campis 2010)

Anderson (2009) argues that according to teachers, accountability has affected both what they teach about the core subjects and how they teach them. Teachers find the pressure to raise test scores driving their curriculum. Along these lines, Anderson suggests effective strategies for promoting active engagement in learning, as well as teaching as conversation (as opposed to lectures and demonstrations) have been identified in all four-core subjects. These subjects include:

1. **English/Language Arts:** Allington and Johnson (as cited in Anderson, 2009) found that students are more engaged when teachers pay attention to and accommodate students' interests, needs, and concerns. Knapp (as cited in Anderson, 2009) students learned more when they had opportunities to discuss what they read.
2. **Mathematics:** Vernille (as cited in Anderson, 2009) found that students are more engaged when they're working on challenging problems. Ginsburg-Block (as cited in Anderson, 2009) found that students learned more when they engaged in reciprocal peer problem solving (with pairs of students taking turns as teachers and learners).

3. **Science:** Peck (as cited in Anderson 2009) found that students are more engaged when they're able to acquire scientific knowledge through inquiry. Campos and Barton (as cited in Anderson, 2009) found that students learned more when they were asked to talk about their ideas, questions, or explanations.
4. **Social Studies:** NCSS (as cited in Anderson 2009) found that students are more engaged when they're grappling with human issues. Hogue (as cited in Anderson, 2009) found that students learned more when teachers incorporated stories into their teaching of history.

The research in *Testing vs. Teaching* surrounds the issue of high stakes testing and expectations of “No Child Left Behind” controlling the classroom instead of rich teaching strategies built for the students needs. Results of the study indicate that “though teachers acknowledge the importance of including active and student-centered strategies on a consistent basis, the state tests seem to drive the curriculum and warrant more teacher-focused instructional methods-lecture, worksheets, and whole class discussion” (Faulkner 2006).

The research in the article, *Get Smart: Facing High-Stakes Testing Together* points to Social Studies teachers and the struggle they face with the large content area they are required to not only cover, but are held accountable for their students knowing all of the knowledge points at the end of the year (Reich and Bally 2010). Reich and Bally discuss ways to face what seems to be such an impossible task.

Their work focuses on findings from teachers' “communities of practice”, in other words, groups of teachers who meet regularly to discuss their practice. Reich and Bally propose that a community of practice can provide a platform in which questions can be raised and solved together. They add that success in the classroom happens when conversations amongst teachers take place about what and how to teach the material. If teachers understand their students' needs and challenges they will be more confident in

their ability to take action to increase their students' chances of success. Reich and Bally provide some guiding questions for teacher communities of practice to explore, in order to aid their students in the tests they take. They include:

- △ What are the skill sets evoked by test items?
- △ What challenges do particular test items pose?
- △ What big disciplinary concepts from the test items?
- △ What patterns emerge in the kinds of questions asked?
- △ What patterns emerge in the content included in the test?
- △ Is a particular item typical or an outlier?

Abrams et. al article, *Views From the Classroom*, discusses the importance and outcomes that public schools are facing with high-stakes testing. Abrams, Pedulla, and Madaus (2003) write that teachers report giving greater attention to tested content areas in response to the pressure to improve test scores. Not only is there the added pressure, but Abrams, et al. also discuss the impact on teacher and student motivation and morale:

McNeil and Smith (as cited in Abrams et. al) said, “While intended to motivate teachers and students to achieve optimal performance levels, the high-stakes nature of state testing programs can have quite the opposite effect. With regard to teachers, researchers have cautioned that placing a premium on student test performance can reduce instruction to test preparation, thus limiting the range of educational experiences to which students are exposed and minimizing the skill that teachers bring to their craft. In other words, the implementation of the state test may, in effect, lead to a de-professionalization of teachers (Abrams 2003)”.

Despite the consequences for districts, schools and/or teachers and students due to stakes levels, “...the majority of teachers surveyed (in a National Board teacher survey) were positive about their state's content standards or frameworks. Fifty-eight percent of all responding teachers reported that their state-mandated tests is based on a curriculum



that all teachers should follow. Similarly, more than half of all teachers (55%) reported that if they teach to the state standards or frameworks, students will do well on the state test” (Abrams, 2003, p. 23).

Abrams, et al. 2003 point out that the results suggest that teachers are accommodating by constructing their own classroom assessments to mirror the format and types of questions on the state test, devoting substantial amounts of time to test preparation, teaching test-taking skills, and spending more time on tested curriculum and less on non-tested content. The undeniable cost of the state test is that it is leading educators to teach in ways that may contradict their own notions of sound educational practice.

*Student’s Attitude and Familiarity Effect Test Taking Ability:*

Bass looked at ways to reduce anxiety during testing among seventh, eighth, and ninth grade students. The researcher found that students who were experiencing an increased amount of anxiety during testing were due to lack of study skills and test taking strategies. The most meaningful changes were that “...students observed the reduction of tenseness when they felt prepared for a test” (Bass 2002).

Yang and Ying (2009) reported that students who were not sophisticated in their learning were not as interested and motivated to use technology in the classroom. The authors summarized that web-based instruction and environments were more of a personal preference and that beliefs about the effectiveness of computer use had a negative effective on learning.

Cavanaugh wrote that using computers for typing papers then having students take a paper-pencil assessment is creating inaccurate test results because students are less familiar with hand-writing. “It creates a very artificial environment for the writing test

that is not what they are accustomed to”, Ms. Cook said (p.3). The author found that eighth graders using computers scored higher on writing tests than their classmates who took writing tests using paper-pencil.

Barnosky takes a different look at spiral review. She found by examining high school curriculum and test scores that students are better off learning how to study and review independently then to do a spiral review as a whole class. She found that because all students learn differently, it does not reach out to enough students to do a spiral review for the whole group.

This study examined two different approaches to spiral review. The authors looked preteaching keywords and previewing key words. Their findings are very similar between the two interventions... “Intervention efficiency can adequately differentiate between two equally effective interventions (Skinner, 2008), and preteaching keywords was more efficient than previewing. Moreover, the practical implications of examining the number of students who obtained a passing grade (60% or D-) suggested that approximately half of these students increased to a passing score when pretaught keywords, whereas none of them obtained a passing score in baseline” (Burns, 2011). This data show that interventions for middle school students show promising results and the best results are when students are retaught the material.

Baska found that teacher’s behavior and knowledge of how to differentiate in the classroom is significant to the extent to which students learn. The study suggests that teachers should be educated not only in the general population, but also for gifted students and special education.

*Teachers Performance and Strategies Effect Student Performance on Tests:*

DeKeyser found that improvement in grades and academic success was evident when technology students were taught how to implement review strategies. Students were taught how to read a selection, review the reading selection, write notes in their spiral notebooks, and review the information in their notebooks throughout the unit.

The author's purpose is to make readers aware of how to improve student's writing performance using dual-spiral peer learning. The article stresses the importance of the teacher's performance and preparation in order to make dual-spiral review an effective process in the classroom. The teacher should create a safe environment for partner work and for students to feel comfortable sharing their thoughts aloud to the whole group. If this is evident in the classroom then students can use the dual-spiral review to benefit their learning. "The dual-spiral inquiry collaborative learning is rooted in the philosophy that more and better learning can occur within a community of learners" (Shang, 2000).

Vojnovich conducted a study in result to student's low interest, poor test scores, and off-task behaviors. She found that incorporating three strategies into the classroom will help students perform better overall.

- 1) The introduction of a variety of critical thinking tasks
- 2) The use of cooperative learning techniques
- 3) The practice of writing reflective journal entries to enhance metacognition

The authors findings were with the intervention of the classroom strategies, "participation increased, reflection, and metacognition were enhanced through journaling,

behavioral problems decreased, and a higher level of critical thinking was apparent in problem solving” (Vojnovich 1997).

This study looks at elementary and middle school teachers methods of teaching. Conklin found that teacher’s ideas about pedagogical strategies for teaching social studies were not the same across the board. However, when a class was offered to this set of teachers interviewed that gave them all the best teaching strategies for teaching social studies, they left with a general knowledge of the most effective teaching strategies and could agree on most of them.

#### *Summary of Literature Review*

Teachers devote large amounts of classroom time to prepare students for tests. These tests can be on a small classroom level, or state wide. Regardless, these tests play into the important decisions teachers have to make about what to teach and how to teach. More and more, teachers test scores within his/her classroom are a reflection of the preparation and learning that is going on in the classroom, so the pressure is on. It is important for teachers to use a variety of strategies to ensure that the students are all at standard. These strategies will range from problem solving, lecture, small group work, entry tasks and exit slips, and relevance to real life. In addition to different strategies to help students learn, teachers also need to be able to motivate and help students remember prior and current curriculum by helping them have a good attitude towards learning and school.

## **Research Question**

In light of this review of the current research, I am still left with several questions. The primary question which drives this project is: To what extent will spiral review tasks effect student performance on end of unit vocabulary tests?

*Secondary questions include:* Does the type of spiral review effect student performance or will daily spiral review in general affect student performance on tests? Will only a certain type of student benefit from spiral review? How long will students need to be exposed to spiral review before it increases test scores?

## **Methodology**

### *Method and Rationale*

A professor of mine once suggested that too many students are what we consider “bulimic learners”. Bulimic learners are students who tend to learn the material so that they can regurgitate it for the test, but they do not remember the material after a given test. To be able to refine skills that were taught earlier in the year, one needs to be able to constantly be practicing those skills. If the students are routinely practicing daily knowledge points, then executing these concepts on an end of chapter test and beyond should become less difficult.

This employs a quantitative research design. This design will be helpful for my research because it allows me to give concrete data in the form of numbers and statistics. This research design allows me to carefully design my research and data before implementing my research which is important in evaluating student performance.

### *Sample*

This study will be conducted at a Western Washington Middle School. The participants include 62 students between the ages of 12 and 13 in a 7th grade classroom. Although the sample of students, 62, is a large sample this numbers of students are the members of the classroom that I will be conducting my research in. I am including every student in this research because it will provide reliability and validity when I am comparing test scores. This sample of students will help guide my research because student's scores will allow me to collect the proper data I need to accurately test my hypothesis.

### *Instrumentation*

In January of 2012, Students will be given the consent form to participate in the research project. When I pass out the consent form, I will explain to students that my goal over the next six months is to improve test scores through spiral review tasks as well as improve overall confidence for end of chapter tests. I will give students two days to get their consent forms returned to me. Once all forms are returned I will assign the students, who are participating, a number. Each student will be given their own number that I will use to code the students for confidentiality purposes.

Starting in January of 2012, I will collect data on the average of three consecutive test scores for the 7th grade humanities students I will be student teaching. The tests that I will record will be the vocabulary tests that the mentor teacher would normally give the students. Students will not be given any curriculum out of the norm. I will record each individual students test score and take the average of those three test scores for students individually. The test scores will be put into a table where it is easy to analyze (students will be coded by their given number).

In mid-March of 2012, I will introduce the “entry spiral review tasks”, explaining to students that they will be getting the opportunity to practice their learned vocabulary words over-and-over instead of just learning them one day and having a test a week later. The spiral review tasks will consist of the use of pictures, stories, and whole group discussions (similar to how daily vocabulary words are introduced). This will be explained in a positive and enthusiastic manner in order to get them excited about not only being better at applying their knowledge, but being even more prepared for their vocabulary test and other major tests such as the Measurement of Student Progress.

The intervention (giving daily spiral review tasks) will take place March 2012 through June 2012 in the classroom where I will be student teaching. I will use past and present vocabulary words provided by my mentor teacher and Washington State’s Essential Academic Learning Requirements and Grade Level Expectations (EALR’s/GLE’s). Each day every student will come to class with their vocabulary journals and they will write the date and learning target. I will start the review by going over the past weeks vocabulary word one at a time. Each review word will have its own slide that contains the vocabulary word, a picture, story, and definition. After reviewing the vocabulary words from the past week, I will give students a new vocabulary word. For the new vocabulary word, I will use vocabulary art where students see a picture of the vocabulary word and have to guess the part of speech and definition of the vocabulary word. Once students have properly guessed the correct part of speech and definition, we will use the vocabulary words in sentences. The review tasks will be conducted in a whole group setting. All students will be allowed equal and fair time to record the words and information in their journal.

During the class discussion of the entry tasks, students will be assured that they will not be receiving a grade for the incorrect educated guesses, just a participation grade for taking part in the whole group discussion and record keeping in their journal. I will explain to students the importance of writing down and understanding the correct answer because the goal is for the students to feel comfortable with prior and current vocabulary words in everyday life. I will not collect the reviews from the class. They will keep the reviews in their humanities journals and use them to study for their tests. This intervention will continue for about 3 weeks before giving the first test.

In Mid-March of 2012, I will give the first test during the intervention. I will give a total of three tests during the intervention. The three tests will be the normal tests from the vocabulary curriculum; the only difference for class instruction and curriculum during the intervention is the daily spiral review entry tasks. After the three tests have been given, I will record each student's individual test scores and then take the average of each student's three test scores and record them on the table where I recorded the tests before the intervention (data will be coded by giving each student a number).

#### *Analysis and Validity*

The data will be analyzed by comparing each individual student's pre test scores and intervention test scores. I will record each of my student's tests scores on a chart that will read the percent increase or decrease for each student. For example, if a student's average test score before the intervention is a 90% and after the intervention the student's average is a 98%, I will write +8% for that student. After each student's differences have been calculated I will count the number of increases and decreases to see if the entry review tasks did in fact improve tests scores.



Going into this research, I have several biases. One inequity I have is teaching to the test. The research design is set-up for students to know what will be on the test and to focus on spiral review to raise test scores. It is not set-up for students or the teacher to use the method most effective for individual students. However, the quantitative approach that this research takes helps guard the bias I have because it shows a true statistical representation if students are improving their test scores or not.

## Data

The data I am presenting in this section is a table of six separate test scores for 62 students. Tests one through three are recorded for each individual student. These tests are before the intervention took place. Tests three through six are also recorded for each individual student, which are the tests taken during the intervention. The last column represents the averages of the first three tests and the averages of the last three tests. See bullet points below for specifics.

- Students are coded by number
- Vocabulary tests are out of 14. Scores represent the percent the student received on the test
- Tests 1, 2, and 3 are before the intervention
- Tests 4, 5, and 6 are the results during the spiral review intervention
- The average represents the average of the first three tests (pre intervention) minus the average of the second three tests (during intervention). The number represents the absolute value written as a percent increase or decrease

Student	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Average
1	100%	93%	93%	100%	93%	100%	+ 2%
2	85%	85%	93%	93%	100%	100%	+ 10%
3	93%	85%	85%	93%	100%	93%	+ 8%
4	64%	71%	78%	78%	85%	85%	+ 11%
5	93%	85%	93%	93%	93%	100%	+ 5%
6	100%	93%	93%	100%	93%	100%	+ 2%
7	85%	93%	100%	93%	100%	100%	+ 5%
8	71%	71%	71%	71%	64%	71%	- 3%
9	78%	71%	78%	78%	85%	85%	+ 7%
10	93%	100%	93%	93%	100%	100%	+ 2%

11	78%	78%	71%	85%	78%	85%	+ 7%
12	100%	100%	100%	100%	100%	100%	+ 0%
13	85%	93%	93%	93%	100%	100%	+ 4%
14	64%	64%	71%	71%	78%	85%	+ 12%
15	93%	93%	100%	93%	100%	100%	+ 2%
16	71%	71%	78%	78%	93%	85%	+ 8%
17	93%	93%	85%	93%	100%	100%	+ 7%
18	78%	93%	93%	93%	85%	93%	+ 2%
19	85%	85%	93%	85%	100%	93%	+ 5%
20	64%	57%	57%	57%	57%	57%	- 2%
21	78%	78%	85%	85%	93%	93%	+ 10%
22	85%	85%	93%	93%	93%	100%	+ 7%
23	71%	78%	71%	78%	78%	85%	+ 2%
24	93%	93%	85%	93%	100%	93%	+ 5%
25	85%	85%	93%	93%	93%	93%	+ 6%
26	85%	78%	85%	85%	85%	93%	+ 5%
27	100%	100%	93%	100%	100%	100%	+ 3%
28	93%	93%	100%	93%	93%	100%	+ 0%
29	64%	71%	78%	78%	78%	85%	+ 9%
30	93%	93%	100%	100%	100%	93%	+ 2%
31	100%	93%	93%	93%	100%	100%	+ 2%
32	85%	85%	93%	93%	100%	100%	+ 10%
33	93%	93%	100%	93%	100%	100%	+ 2%
34	78%	71%	78%	78%	78%	78%	+ 2%
35	78%	78%	85%	85%	85%	85%	+ 5%
36	85%	85%	93%	93%	93%	100%	+ 8%
37	71%	71%	78%	78%	85%	85%	+ 9%
38	64%	71%	71%	78%	78%	85%	+ 12%
39	85%	85%	93%	93%	93%	100%	+ 8%
40	93%	93%	100%	93%	100%	100%	+ 2%
41	78%	85%	85%	85%	85%	93%	+ 5%
42	93%	85%	93%	93%	93%	100%	+ 5%
43	93%	100%	85%	100%	100%	93%	+ 5%
44	93%	93%	100%	100%	93%	100%	+ 2%
45	85%	85%	93%	93%	93%	100%	+ 12%
46	100%	85%	85%	93%	100%	100%	+ 7%
47	78%	78%	85%	93%	85%	85%	+ 7%
48	93%	93%	100%	100%	93%	100%	+ 2%
49	78%	78%	85%	85%	85%	93%	+ 7%
50	93%	93%	100%	93%	100%	100%	+ 2%
51	85%	93%	93%	100%	93%	100%	+ 7%
52	78%	78%	85%	85%	85%	93%	+ 7%
53	93%	93%	100%	100%	100%	100%	+ 5%
54	78%	64%	78%	78%	83%	78%	+ 6%
55	85%	100%	93%	93%	100%	100%	+ 5%

56	85%	85%	93%	93%	100%	93%	+ 8%
57	78%	78%	85%	85%	85%	93%	+ 7%
58	93%	93%	100%	100%	100%	100%	+ 5%
59	100%	85%	93%	93%	100%	100%	+ 5%
60	78%	85%	85%	93%	93%	93%	+11%
61	71%	78%	71%	78%	78%	85%	+ 7%
62	78%	78%	85%	85%	85%	93%	+ 7%

After reviewing the results, I created three tables: Students who increased their test scores during the intervention, students who did not increase their test scores, and students who remained the same overall percent. Table one is the students who did increase their average test score during the intervention. It shows that 58 out of 62 students (about 94%) showed an increase. The +6% comes from adding the 58 students averages together and dividing by 58 to show the average increase among all 58 students. Table two shows that 2 out of the 62 students did not increase their average test scores during the intervention and unfortunately showed a decrease. The decrease for those two students was an average of 2.5%. Table three shows the representation of the 2 students out of 62 students that kept their average test scores the same pre-intervention and during intervention.

<b>Table 1</b>	
<b># of Students with Increase</b>	<b>Average Percent Increase</b>
<b>58 / 62</b>	<b>+ 6%</b>

<b>Table 2</b>	
<b>#of Students with Decrease</b>	<b>Average Decrease</b>
<b>2 / 62</b>	<b>-2.5%</b>

<b>Table 3</b>	
<b>#of Students with No Change</b>	<b>No Change</b>
<b>2 / 62</b>	<b>0%</b>

### **Analysis**

The data proved the hypothesis of this paper to be true. This research project was designed to see if spiral review for weekly vocabulary would have an effect on end of unit vocabulary tests. I hypothesized that the spiral review would increase the average test scores.

The data collected proves some interesting results. Out of sixty-two students, there were only two students who did not show an increase in their average test scores pre intervention to post intervention and two students who remained the same percent overall. This means 93% of students showed an increase during the spiral review intervention. The two students who did increase their test scores typically score below average in humanities. Looking through the data table, it is interesting to see if a student scored poorly on a test pre intervention, that test score typically did not appear again during the intervention. Looking at three students who are all at very different levels the pattern of not falling back to their lowest score is evident in each of their tests.

*High Achieving Student Results:* 100%, 100%, 93%, 100%, 100%, 100%

*Average Student:* 78%, 78%, 85%, 85%, 85%, 93%

*Below Average Student:* 64%, 71%, 71%, 78%, 78%, 85%

The lowest score for the high achieving student is a 93% that was received before the intervention. The student's scores during the spiral review were all above 93%. Similarly, the average student scored a low score of 78% pre intervention. During the spiral review intervention, the student scored 7% higher and above on all test scores.

Lastly, the below average student's lowest score was a 64%. During the spiral review, the lowest test score was 14% higher.

Another interesting note about the data is that the average student improved at a higher rate than the high achieving or below average student. Students who were scoring in the 70% and 80% range tended to increase their average test scores by higher than 7% while the high achieving students were often below 5% increase. The lower achieving students had more of an all over the board increase or decrease, but were typically in the 2% - 8% range.

Although the results show an increase in test scores, there are still some questions to be answered about how each of the three intervention test scores compare to one another and what students this intervention really benefits.

### **Implications**

This research project suggests that spiral review is key to success for students. Going into this research project, my goal was to find whether or not spiral review would make a difference in end of unit vocabulary test scores. The data not only proves that spiral review is crucial to success in tests scores, but I also found that student's confidence levels increased with constant review.

“To gain proficiency at Basketball, Football, or any other sport requires a degree of dedication or practice... it also takes repeated experience to develop good skills” (Wilson & Cleland, 1989). The classroom should take the same stance for preparing students for major tests, whether it be a classroom based assessment or a state wide test, about the importance to weave previously taught concepts into the current unit of study to keep the information fresh in the student's minds. I strongly believe that teachers would

benefit from implementing a spiral review into their school day because it is very likely they will see positive results in their students.

As mentioned before, this study opens up a lot of questions for future research. Though this research proves that overall student scores increase from spiral review, further research needs to be done to look into what point do student test scores increase and for what type of student does spiral review not prove effective.

## **Conclusion**

By readily preparing students for tests, it is important to weave previously taught concepts into the current content of study to keep the information fresh in student's minds. Teachers do devote a fairly large amount of classroom time to test-preparation activities, but finding the most effective way to dedicate the review will benefit students the greatest. This research showed that spiral review is an effective way to review and I truly believe teachers should dedicate a good chunk of time each day implementing a productive form of spiral review, the payoffs for classroom tests and high-stakes tests will be worth it.

Why is it difficult to incorporate a large amount of time to review? Research shows that teachers are being forced to teach to the test and do not have time for review and implementing strategies into the classroom that are the most beneficial to students. As an educator, I feel saddened that our children are in a sense suffering from the mandated tests and high-stakes that are placed on teachers for students to take and pass these tests. McNeil and Smith (as cited in Abrams et. al) said, "While intended to motivate teachers and students to achieve optimal performance levels, the high-stakes nature of state testing programs can have quite the opposite effect. With regard to



teachers, researchers have cautioned that placing a premium on student test performance can reduce instruction to test preparation, thus limiting the range of educational experiences to which students are exposed and minimizing the skill that teachers bring to their craft. In other words, the implementation of the state test may, in effect, lead to a de-professionalization of teachers (Abrams 2003)”.

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