Culminating Experience Action Research Projects, Volume 14, Spring 2009

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Introduction

As a part of the teacher licensure program at the graduate level at The University of Tennessee at Chattanooga (UTC), the M.Ed. Licensure candidate is required to complete an action research project during a 3-semester-hour course that coincides with the 9-semester-hour student teaching experience. This course, Education 590 Culminating Experience, requires the student to implement an action research plan designed through (a) the Education 500 Introduction to Inquiry course, (b) one of the two learning assessments required during student teaching, or (c) a newly-designed project not used as one of the learning assessments.

With funding through a UTC Teaching, Learning, and Technology Faculty Fellows award, the Education 590 course is conducted through the use of an online, course management system (Blackboard), allowing for asynchronous discussion and use of the digital drop box feature for submitting required papers.

The action research projects from, spring semester 2009, are presented below.

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The Impact of Seating Arrangement Upon a Discussion-based,

Secondary Social Studies Classroom

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Education 590, Spring 2009

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Introduction

For the purpose of this study, I evaluated the effects of seating arrangements within a social studies classroom to assess the impact upon the learning process. My concern was that seating arrangement within a social studies classroom, where an emphasis is placed upon both student-and teacher-led discussions, can heavily influence the quality of learning taking place. Seats were arranged into two seating arrangements: traditional vertical rows and an amphitheater arrangement. Both qualitative (in the form of a teacher reflection journal) and quantitative (in the form of student surveys, and pre- and post-tests) methods were used to evaluate student learning within the respective seating arrangements.

Limitations

While this study was conducted to evaluate the effects of the impact that seating arrangement had upon learning in a secondary social studies classroom, there are a few limitations. First, the teacher reflection journal and the student survey carried a considerable weight upon the use of classroom discussion within the seating arrangement. Because of this, classrooms that do not incorporate classroom discussions on a daily basis may find it difficult to utilize these findings to aid in establishing a classroom seating arrangement. Secondly, the amount of physical space allotted to a classroom may inhibit teachers from incorporating the amphitheater arrangement.

Research Questions

1. Does seating arrangement within the classroom affect learning? If so, how?

2. Will students like or dislike the amphitheater seating arrangement solely because it is new?

3. Knowing that the results of the pre- and post-tests will not affect their grades, will

the students take the test seriously?

Literature Review

Several studies have found that classroom discussions are effective instructional techniques within the social studies classroom. McCormick utilized an inquiry approach, in which 119, fifth-grade students were required to ask questions in order to find how historical events unfolded (McCormick, 2008). Using pre- and post-tests and student surveys, McCormick found that, in using this method, 92% of the fifth-grade students found history interesting at the conclusion of the study (McCormick, 2008). Also, Buckley, Bain, Luginbuhl, and Dyer found that employing classroom discussion as a supplement to a lecture-based, college geography course was viewed as effective (2004).

Newstreet had his 12th-grade, social studies students use the Socratic dialogue to evaluate the poem, "The Midnight Ride of Paul Revere" (2008). Prior to beginning the Socratic dialogue, the students were required to answer a series of questions pertaining to the poem, as homework, the night before the discussion (Newstreet, 2008). Also, students were required to adhere to a series of rules, which were set into place to ensure courtesy throughout the discussion (Newstreet, 2008). He found that the students responded seven times more to student-initiated comments than teacher-initiated comments (Newstreet, 2008).

Weinstein evaluated the classroom environment and its effects upon student achievement (Weinstein, 1979). Within her study, she evaluated the effects of different physical classroom features, including windows, density, amount of privacy, noise levels, and seating positions (Weinstein, 1979). In a similar study, Rayneri, Gerber, and Wiley evaluated the classroom environment on gifted middle school students. They wanted to identify the gifted students' classroom setting preferences, and how they correlate with student achievement (2006). They

administered the Learning Style Inventory, which gives information as to what the students prioritize as their preferences; which includes factors such as sound, lighting, and seating arrangement. Within this setting, they found that the students preferred an informal seating arrangement (Rayneri, Gerber, & Wiley, 2006).While evaluating a fifth-grade classroom that utilized classroom discussion as a major portion of its instructional method, Hadjioannou cited that having an inviting and pleasant physical environment was necessary for the exchange of student ideas (2007).

Data Collection and Results

Method and Design

This study was conducted over a 2-week period with two honors world history classes in a medium-sized (approximately 800 students), urban high school in Chattanooga, Tennessee. Both classes had about the same number of students; one class had 25 students while the other class had 26 students. Over the period of 2 weeks, we covered World War II from a world history standpoint. To reduce confusion, I decided to break the war into the European theater and the Pacific theater. For the European theater, students were placed in the traditional rows setting, while they were arranged in an amphitheater arrangement during the Pacific theater portion.

Because of the difference in the information conveyed from week 1 to week 2, I tried, to the best of my ability, to match my instruction styles. For example, I began each week with a background lesson to introduce to the material. In the case of week 1, beginning with the Franco-Prussian War, we covered tensions in Europe leading up World War II. At the beginning of week 2, we discussed pre-World War II Japanese and United States relations. In both cases, I wanted students to have a strong background, so that they could place World War II into a context of world history.

For the first week, the traditional rows were set in a five by five arrangement (in Class 2, one student sat in a sixth row). Five feet separated the first row from the white board, and 2-foot aisles separated each column. Students were randomly assigned to seats.

During the second week, the amphitheater arrangement was composed of three curved rows, with two rows of nine students and one row of eight students. While space between the first row and the white board remained relatively the same, the distance between the last row and the back of the classroom, as well as the distances between the aisles, changed from that of the previous arrangement. In the traditional rows arrangement, the last row of student desks were inches from the back of the classroom, whereas, in the amphitheater arrangement, 7 1/2 feet separated the last row from the back of classroom. Distances between the student desks in the individual rows were reduced to only a few inches. Also, students were not assigned randomly in this setting, because I wanted to ensure that some students were separated from each other to prevent classroom interruptions.

Quantitative Data Analysis

Pre- and Post-test

At the beginning of each week, I administered a pre-test, and informed the students that the results would impact the time spent on a particular area of the theater. For example, if a majority of students demonstrated that they had a basic understanding that the German invasion of Poland marked the beginning of World War II, then little classroom time would be allotted to this area. However, if students demonstrated little or no background knowledge on a particular area of World War II, such as D-Day, special attention would be paid to this area.

After each week of instruction, in the respective seating arrangement, students took the same test. Both pre- and post-tests originally consisted of 25 questions, but they were reduced to

20 questions, largely because some of the information on the pre- and post-tests was either covered briefly, or not at all. This can, largely, be attributed to the breadth of information that needed to be covered in order to meet the Tennessee standards for World History. Both tests were made with the Exam View Test Generator by FSCreations, Inc.

Student Survey

Another quantitative method for evaluating the students' experiences, with regard to the alternating seating arrangement, was the student survey. This questionnaire consisted of a series of eight questions in which responses were scored on a scale from one to eight, with one being the least popular/effective, and eight being the most popular/effective. This survey was conducted at the conclusion of the 2-week study.

Originally, I had intended to incorporate open response questions, such as, "Do you feel that you learn well in this seating arrangement? If so, why?" However, seeing that this survey was to be administered after the final post-test, I felt that it would be best to keep the survey short. Also, I decided to use an even number of responses to avoid receiving an abundance of neutral answers. The survey is presented in Appendix A.

Qualitative Data Collection

Every day, after each class, I completed a brief teacher reflection journal. This was designed to reflect upon the sequences that manifested within the day's class. I used this to alter the next day's instruction and to better understand the classroom dynamic. More importantly, this was designed to see if there was a correlation between student behaviors and the two classroom seating arrangements. For example, during week 1, in Class 1, a few students repeatedly interrupted their fellow students, thus, disrupting the flow of the classroom instruction. The journal consisted of three open-ended questions, and took about 5-7 minutes to complete (see

Appendix B).

Ethical Considerations

Students were informed that I was going to conduct a study regarding the effect of seating arrangement, and that they were not required to participate. If a student or parent decided that they did not wish to continue to participate in the study, they were able to terminate their commitment, without penalty.

Those that wished to not participate were neither penalized nor identified by myself to other individuals. In addition, students grades were not affected either positively or negatively by one's preference to participate in the study. Of the 26 students in Class 1, 20 students consented to participate in the study. Of the 25 students in Class 2, 20 consented to participate.

Analysis and Results

Qualitative: Teaching Reflection Journal

Week 1: Traditional rows. The majority of the classroom interruptions in Class 1 regularly originated from the back left to back center of the classroom. These classroom interruptions were often connected to the asking of irrelevant questions, talking out of turn, and talking to neighbors. During classroom discussions, the biggest challenge for Class 1 was staying on topic. Because of the frequency of interruptions, which would be as high as seven per day, the pace of classroom instruction was inhibited.

In Class 2, interruptions seemed to stem not so much from a particular area in the classroom, but from individuals asking irrelevant questions. For example, if I misspelled something on the board, students would begin to argue about how to correctly spell it, and would demand that it be spelled correctly on the board before the instruction could be continued. Despite this, major classroom interruptions remained around three or fewer, per day; thus, we

were able to cover more information in Class 2 than in Class 1.

With regard to classroom discussions, students in both classes often verbally expressed that they had difficulty hearing either their peers or me, if they were far from the speaker. As a result, the students and I were required to repeat our statements.

Week 2: Amphitheater arrangement. In Class 1, students that I had identified as being prone to disturbing class were assigned seats away from their friends. Although this was in direct opposition to my plan of assigning seats randomly for both weeks, I felt that it was necessary to reduce the classroom interruptions. Within this seating arrangement, I noticed that students were asking for a statement to be repeated less frequently. Student engagement increased from the previous week, in that more students asked questions and participated in the classroom discussions. Also, the quality of the classroom discussion increased from week 1 to week 2, because the students were more able to remain on topic.

The level of engagement, quality of classroom discussions, and number classroom interruptions for Class 2 remained relatively the same as in week 1. Despite this, students gave verbal and nonverbal cues that they felt uncomfortable with the new seating arrangement. On a daily basis, students complained that there was too little space in between the student desks. Also, as the week progressed, the students would physically move their desks into pseudotraditional, vertical rows.

Quantitative Data Collection

Pre- and post-tests. Class 1 saw the greatest improvement in the traditional rows setting; however, this conflicts with the results of the student survey and the teacher reflection journal, both of which indicate that Class 1 would learn better in the amphitheater arrangement. The class average of pre-test 2 was six points higher than that of pre-test 1 (see Figure 1). This may be the

result of having 1 week of instruction in World War II.

	Class 1 Pre-test 1	Class 1 Post-test1	Class 1 Pre-test 2	Class 1 Post-Test 2
Average	47.25	67.06	53.33	59.21
Maximum	85	90	80	95
Minimum	10	35	25	20

Figure 1. Pre- and post-test results for class 1. There were 100 possible points.

Class 2 saw the greatest percentage increase during week 2, with the amphitheater arrangement (see Figure 2). The teacher reflection journal results compliment these results. In both cases, Class 2 post-test average scores were higher than those of class 1, which may be attributed to the fact that more material was able to covered, due to fewer classroom disruptions.

	Class 2 Pre-test 1	Class 2 Post-test 1	Class 2 Pre-test 2	Class 2 Post-test 2
Average	53	66	55.79	73.06
Maximum	75	95	90	95
Minimum	35	30	25	45

Figure 2. Pre- and post-test results for class 2. There were 100 possible points.

Classroom interruptions, in both classes, but more so in Class 1, definitely inhibited the amount of information that could be covered in the allotted amount of time. In Classes 1 and 2, several students stated that, because the post-tests did not count as a grade, they were not going to take it seriously. This attitude, which was expressed vocally by numerous individuals in both classes, combined with classroom interruptions, may indicate why some, but not all, of the test scores were so low. (Tests are contained in Appendices C and D.)

Student Survey

Class 1. As a whole, students in Class 1 reported that they favored the amphitheater arrangement slightly to that of the traditional vertical rows. Only two students responded with 1s, regarding whether they preferred the amphitheater. In contrast, eight students responded with 8s, regarding their preference to the amphitheater.

An overwhelming majority of the students recorded that the amphitheater arrangement was a much more effective seating arrangement than the vertical rows. In both cases, students reported that they were able to see the whiteboard and hear their peers well.

Class 2. Unlike Class 1, more students in Class 2 slightly favored the vertical rows, and found that arrangement to be more effective. This view definitely mirrors the students' behavior of moving the desks from the amphitheater arrangement back into vertical rows in week 2. Despite this, the students had much more difficulty seeing the whiteboard with the vertical rows arrangement than that of the amphitheater setting.

<p align="center">Conclusions and Recommendations</p>

After analyzing the day-to-day happenings, I noticed, very quickly, that students in Class 1 and students in Class 2 behaved very differently. For the first week, Class 1 had significantly more classroom interruptions than did Class 2.

In conclusion, I believe that seating arrangement does have an impact upon the social studies classroom; however, factors inhibit the quantifying of how great an impact it makes. The largest limitation, with regard to quantification, lies within the brevity of the study. Only 2 weeks, plus a series of two pre- and post-tests, did not provide enough evidence for or against the use of one seating arrangement over the other.

On the other hand, 2 weeks was adequate time to receive qualitative data that indicated that students behave differently within the alternating seating arrangements. Unfortunately, this also has its limitations. For instance, the quality of classroom discussions, as well as student engagement, increased in both Classes 1 and 2 from week 1 to week 2. However, I am unsure if this is a result of moving talkative students from each other, the seating arrangement, or a combination of the two. Also, I am unsure as to whether the classroom discussions improved

because of the seating arrangement or because of other factors, such as difference in interest levels, or comfort level with me as instructor.

The overall experience of this study was positive in that it demonstrated that seating arrangements do affect a social studies classroom. Because the results of this study are limited in scope, I would like to pursue seating arrangements as a future action research study. If I was to conduct a similar study in the future, I think that it should take place over a period of a semester. Either two or three seating arrangements (which may include vertical rows, amphitheater, and clusters) would be used, but they would be alternated every week. Also, I would continue to use pre- and post-tests, a teacher reflection journal, and student surveys. The surveys would follow the same format, and would be void of free response questions, thus making it easier to quantify. Also, they would be administered every 3 weeks to evaluate student experiences with the 3-week rotation throughout the semester; as a result of the length of the study, student preferences will be more reliable. Also, the longer time frame would provide much more data regarding student performance on pre- and post-tests. Approval permitting, I would like to utilize a video camera to evaluate student behavior within the respective seating arrangements.

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Appendix A: Student Survey

Complete the following questions according to your personal experience with the seating arrangement study. All responses will remain confidential. DO NOT WRITE YOUR NAME ON THIS PAPER.

For questions 1-4, answer the following questions regarding your experience with the traditional rows seating arrangement.

1. Rate your ability to hear your peers during classroom discussions on a scale from one to eight: One being "not very well" and eight being "very well."

   1   2   3   4   5   6   7   8

2. Rate your ability to see the whiteboard at the front of the classroom on a scale from one to eight: One being "not very well" and eight being "very well."
   1   2   3   4   5   6   7   8

3. Rate the effectiveness of this classroom seating arrangement on a scale from one to eight: One being "not very effective" and eight being "very effective."
   1   2   3   4   5   6   7   8

4. Rate your preference of this seating arrangement: One being "I do not prefer this arrangement" and eight being " I prefer this seating arrangement very much."
   1   2   3   4   5   6   7   8

For questions 5-8, answer the following questions regarding your experience with the amphitheater seating arrangement.

5. Rate your ability to hear your peers during classroom discussions on a scale from one to eight: One being "not very well" and eight being "very well."

   1   2   3   4   5   6   7   8

6. Rate your ability to see the whiteboard at the front of the classroom on a scale from one to eight: One being "not very well" and eight being "very well."
   1   2   3   4   5   6   7   8

7. Rate the effectiveness of this classroom seating arrangement on a scale from one to eight: One being "not very effective" and eight being "very effective."
   1   2   3   4   5   6   7   8

8. Rate your preference of this seating arrangement: One being "I do not prefer this arrangement" and eight being "I prefer this seating arrangement very much."
   1   2   3   4   5   6   7   8

Appendix B: Teacher Reflection Journal

Class
Date

Were there any classroom disruptions? If so what were the causes?

Describe the level of student engagement.

Describe the quality of the classroom discussions.

Appendix C: Pre- and Post-test 1

Pre- and Post-test 1
World War II Test 1

Multiple Choice
Identify the choice that best completes the statement or answers the question.

_____ 1. Which country signed a nonaggression pact with Germany?
a. Russia   c. Italy
b. Japan   d. Poland

_____ 2. Hitler demanded, and was given, what area in northwestern Czechoslovakia?
a. Slovakia   c. Serbia
b. Danzig   d. Sudetenland

_____ 3. Two days after Hitler's invasion of _____, Britain and France declared war on Germany.
a. Poland   c. France
b. Austria   d. Slovakia

_____ 4. Hitler's blitzkrieg, or "lightning war," was
a. a new form of warfare that used airplanes exclusively for the first wave of attack.
b. a form of attack that used tank divisions supported by air attacks.
c. a strategy in which armies rested very little between attacks to wear the enemy down more quickly.
d. an air force strategy that combined jets and helicopters in a single attack.

_____ 5. When the *Einsatzgruppen* proved to be too slow for the Nazis, they
a. built special extermination camps in Poland.
b. tried to speed them up using zeppelins.
c. gave up and focused their attention on the Soviet front.
d. invaded England.

_____ 6. Great Britain's policy of _____ toward Germany was based on the belief that the satisfaction of reasonable demands would maintain peace in Europe.
a. firm resistance   c. appeasement
b. detente   d. *Anschluss*

_____ 7. Neville Chamberlain boasted that the Munich Conference meant
a. Great Britain had made Germany back down.
b. "peace for our time."
c. Germany and Russia were allies.
d. "safety for Mother England."

____ 8.   At ____, heroic efforts by the British Royal Navy and civilians in private boats managed to evacuate 338,000 Allied troops.
a. Danzig   c. Normandy
b. the Maginot Line   d. Dunkirk

____ 9.   The Battle of Stalingrad was a crushing defeat for Germany because
a. the German army vastly outnumbered the Swiss army, and yet could not take the city.
b. the entire German Sixth Army, considered the best of the German troops, was lost.
c. the Soviet army then used the captured tanks and other weapons to push Germany completely out of the Soviet Union.
d. it was the first major defeat suffered by the German army, proving they were not invincible.

____10.   The ____ were special strike forces charged with the task of rounding up and killing Jews.
a. *Einsatzgruppen*   c. *Gutreisen*
b. *Luftwaffe*   d. *Panzers*

____11.   ____, Hitler's minister for armaments and munitions, was able to triple the production of armaments despite Allied air raids.
a. Carl Reiner   c. Albert Speer
b. Werner von Braun   d. Heinrich Strasser

____12.   The slaughter of European Jews by the Nazis became known as what?
a. the Cold War   c. the Holocaust
b. the Great Atrocity   d. the Vast Massacre

Matching

Match each item with the correct statement below.
a. London
b. Heinrich Himmler
c. Luftwaffe
d. Axis Powers
e. Allied Powers
g. Nazi-Soviet Nonaggression Pact
h. isolationism
i. D-Day

____13.   leader of Hitler's SS troops

____14.   This European city was bombed extensively by the German air force.

____15.   history's greatest naval invasion

____16.   gave Hitler the freedom to attack Poland

____17.   German air force

____18.   Germany, Italy, and Japan

____19.   policy that initially kept the United States from becoming involved in the war against Germany

____20.   Great Britain, the Soviet Union, and the United States

Appendix D: Pre- and Post-test 2

Pre- and Post-test 2
World War II Test 2

Multiple Choice
Identify the choice that best completes the statement or answers the question.

_____ 1.   Which U.S. president made the decision to drop the atomic bomb to end World War II?
a. Harry S. Truman   c.   John F. Kennedy
b. Franklin D. Roosevelt   d.   Douglas McCarthy

_____ 2.   On December 7, 1941, the Japanese
a. launched a full-scale invasion of southern China.
b. attacked the British colony on the Bataan Peninsula.
c. launched a surprise attack on the U.S. Pacific fleet at Pearl Harbor.
d. invaded Alaska.

_____ 3.   What was the turning point of the war in the Pacific?
a. the Battle of Iwo Jima   c.   the Battle of the Coral Sea
b. the Battle of Dunkirk   d.   the Battle of Midway Island

_____ 4.   In order to address labor shortages during the war, Japan
a. developed robots.
b. allowed women to hold jobs from which they had previously been banned.
c. brought in Korean and Chinese laborers.
d. forced workers to work double and sometimes even triple shifts.

_____ 5.   At the Yalta Conference, the Allies agreed to
a. allow free elections in Africa.
b. the establishment of a United Nations organization after the war.
c. a military treaty pledging support to each other against any future attacks.
d. resolve all future disagreements peacefully to avoid another such terrible war.

_____ 6.   Which of the following countries was in the area of Soviet influence after World War II?
a. Czechoslovakia   c.   Finland
b. Austria   d.   Greece

_____ 7.   Which of the following countries was in the area of Western influence after World War II?
a. Yugoslavia   c.   Albania
b. Austria   d.   Poland

Matching

Match each item with the correct statement below.
a. Midway Island
b. Manchukuo
c. kamikaze
d. New Order
e. Isolationism
f. Potsdam Conference
g. Anti-Comintern Pact
h. Hiroshima
i. Allied Powers
j. Axis Powers
k. "Mukden incident"
l. Appeasement
m. Vichy France

____ 8.   The United States defeated Japan in a battle here to turn the tide of World War II in Asia.

____ 9.   The first atomic weapon was dropped on this Japanese city.

____10.   policy that sought peace and stability by satisfying the reasonable demands of dissatisfied powers

____11.   Germany, Italy, and Japan

____12.   treaty between Germany and Japan promising a common front against communism

____13.   Japanese pilots who flew suicide missions against U.S. warships

____14.   meeting at which Truman demanded free elections throughout Eastern Europe

Multiple Choice

____ 15. Who was the Vice President that succeeded Franklin D. Roosevelt towards the end of World War II?
A.   Harry Truman   C. Dwight Eisenhower
B. Douglas McArthur   D. Henry Ford

_____16. What US general commanded US forces in the South Pacific?
A.   Winston Churchill   C. George S. Patton
B. Dwight Eisenhower   D. Douglas McArthur

_____17. What was the period of political tensions between the United States and the USSR after World War II?

A.   Korean War   C. Cold War
B.   Cuban Missile Crisis   D. Vietnam War

_____18. What ethnic group living on the American West Coast was required to live in isolated camps and sign loyalty oaths?

A.   African Americans   C. Chinese Americans
B.   Japanese Americans   D. German Americans

____19.   In terms of percentages, which of the following branches of the armed forces had the largest increase from World War I to World War II?

a. Army   c. Marines
b. Navy   d. Coast Guard

____20.   In terms of percentages, which of the following branches of the armed forces had the smallest increase from World War I to World War II?

a Arm   c Marines
. y   .
b Nav   d Coast Guard
. y   .

Determining Effective Strategies in Dealing with Off-Task Students: A Study of

Elementary Physical Education Classes

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Education 590, Spring 2009

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Introduction

A biology teacher has extensive content knowledge in the area of human anatomy, but the majority of his or her students just failed their third anatomy quiz. The teacher is utilizing different methods and styles of teaching and allotting extra class time for review sessions, but the students' understanding of the material is stagnant. What is corrupting the learning environment, despite the multiple attempts to differentiate and improve instruction? The answer to this question is classroom management. Authors of article, *"Classroom Management is not just for Teachers"* (1994), deem that "classroom management is the single most important factor governing student learning" (p. 1).

A positive learning environment allows students to engage in lessons and make valuable attempts to understand concepts. What is a positive learning environment? A positive learning environment is one that maintains order amongst the students, encourages learning, and engages all of the students. Not only does the proper learning environment allow students to learn and focus on the pertinent information that is being taught, but it improves social competence amongst students (Webster-Stratton, Reid, & Stoolmiller, 2008, p. 479).

There are instances in which a teacher takes all of the appropriate precautions, and classroom management is still destroyed; this usually occurs when students become off-task. When a student becomes off-task, it is important that the teacher deal with the matter in a quick and efficient manner. There are many different strategies that can be used in this type of situation. So, it is important for teachers to use the most effective strategy for the particular situation.

The learning environment is a vital element in all areas and grade levels.

Though most would associate classroom management with the basic, core subject-area classroom environment, management techniques greatly determine the success of related-arts courses, as well. For instance, classroom management is vital for the success of physical education classes. Why is classroom management so important in physical education? Physical education is usually held either outdoors, in a gymnasium, or in another large building or area (Balderson & Sharpe, 2004). When dealing with such an open environment, the teacher must have full control of the students; otherwise, conditions can quickly escalate into complete chaos.

<div align="center">Review of Literature</div>

There are several steps that a teacher must follow in order to achieve a proper learning environment. First, a positive environment must be established (Balderson & Sharpe, 2004). The classroom environment should be welcoming and inviting, and one in which students feel comfortable. Usually, this type of environment will result in the highest amount of learning and the least amount of discipline problems.

In order to establish a positive learning environment, school and classroom guidelines should be explained at the beginning of the year (Kansas National Educational Association KNEA, 2000). During this time, the teacher should let students know what is considered to be "unacceptable behaviors, the borderline between acceptable and unacceptable behaviors, and the consequences of those actions" (Sprick, booklet, 2006). Though the teacher can add additional rules and consequences, it is important to follow the school's discipline procedures (KNEA, 2000). Once the teacher has explained the classroom discipline policies, students should be expected to comply. And, if a student refuses to comply, the teacher should

take time to correct the behavior (Smith & Lambert, 2008, p. 16).

When a student, or a group of students, acts in an inappropriate manner, it is vital that the teacher address the issue and solve it immediately, according to the rules that have already been established. One suggestion is for the teacher to use the "Least Approach", which is recommended by the Tennessee Education Association (TEA, 2008) an affiliate of the National Education Association (NEA, 1981). This procedure is also supported by a research study by (Gable, Hester, Rock, and Hughes (2009, p. 202).

The first step of this approach is to "leave the situation alone," if it is minor. If the problem continues, it is recommended that the teacher "end the action indirectly" through eye contact, walking towards the student, or calling out the student's name (NEA, 1981). It is not appropriate to handle the situation by making fun of the student or making sarcastic remarks (KNEA, 2000). The next step is to fully attend to the problem and "explain the consequences that are involved with the action." This should alleviate the problem; once the teacher has a chance, he or she should document the incident for future reference (NEA, 1981). When all attempts of discipline fail, research supports using time-out as an effective method of disciplinary action (Albrecht, 2008, p. 49).

In addition to the Least Approach, there is other available literature regarding management and discipline strategies in the classroom environment. TEA (2008) has created a list of 12 strategies that should not be used in dealing with discipline problems: nagging, yelling, lecturing, threatening, forcing the student to apologize, sending the student to the principal too quickly, using sarcasm, writing the students

name on the chalkboard, having the student write sentences, spanking the student, having the student sit outside in the hall, and humiliating the student. These discipline methods are counter-productive, and some of them can actually cost a teacher his or her job.

While some discipline methods are ineffective, other strategies have been proven, by previous research studies, to show particularly high levels of success. Sprick outlined his approach to dealing with off-task students in his article, "Discipline in the Secondary Classroom" (2006). First, the teacher should identify the off-task behavior. Next, the teacher should clearly define the borderline between acceptable and unacceptable behaviors; this should, ideally, take place at the beginning of the school year, before the behavior ever occurs. Finally, Sprick emphasizes the concept of consistency when punishing a student.

All of the information compiled during the literature review was intended to guide the researcher in the right direction in determining the most effective discipline strategy in dealing with off-task students in the physical education environment. After looking at all of the previous research findings, as well as the information obtained from the cooperating teacher, the researcher created a list of possible strategies that would be used during the 1-week, experimental period.

Previous research has proven that there are precautionary measures that a teacher can take to prevent discipline problems. Though these methods can reduce discipline problems, realistically, off-task behaviors still occur. In addition to the Least Approach, there are many other ways to handle discipline problems and off-task students, with varied levels of success. The purpose of this research is to determine

the most effective strategies in dealing with off-task, student behaviors. In particular, this research looks at finding the most effective strategy in dealing with off-task student behaviors in the elementary physical education realm.

Research Questions

In order to determine the most effective strategy in physical education, the researcher kept the main research question in mind: "What strategy is most effective when dealing with off-task student behaviors during elementary physical education classes?" For the purpose of this research project, all of the instruments and procedures were chosen in order to answer the particular questions that were posed. Secondary questions include:

- What are some successful methods of discipline in elementary physical education?

- What are some unsuccessful methods of discipline in elementary physical education?

- What determines the level of success of different methods of discipline?

Data Collection and Results

Data Collection

Methodology

Participants. In order to identify the effective strategies that can be used in dealing with discipline problems in the physical education class, the researcher spent 2 weeks in physical education classes in the elementary school environment. The classes of primary emphasis, and those on which research conclusions were based, were the third- through fifth-grade classes at an elementary school in the Hamilton

County school system; each grade level had four classes that attended physical education class one to two times per week.

Prior to the research study, all students in Grades 3 through 5 were given parental consent forms. To be eligible to participate in the study, students were required to turn in a signed consent form within a 1-week time frame. The researcher collected 39 forms from fifth graders, 41 forms from fourth graders, and 28 forms from third graders. Throughout all grades, 17 parents declined consent. Overall, 91 students were involved in the research project.

Instruments. There were several methods of data collection that were used in order to identify the most effective strategy in dealing with off-task students. First, a survey was administered to the cooperating teacher. This survey asked questions that pertained to previous experiences with strategies and success levels. Next, the researcher reviewed the available literature to learn about strategies that were already proven to be successful. After a foundation of knowledge was established, the actual research began.

The first week of research was composed strictly of observations. The researcher watched each of the classes that were conducted by the cooperating teacher. Every time an off-task behavior occurred, it was recorded on the observation log. In addition to the off-task behavior, the researcher recorded the strategy that the teacher used and the effectiveness of the strategy (effectiveness was rated on a 10-point scale). There was also space for additional comments and notes.

The researcher spent the next week teaching the classes; this portion of the project was identified as the implementation phase. This phase allowed the researcher

the opportunity to implement some of the strategies that had been observed in the prior week and strategies that were identified during the literature review. When any student committed an off-task behavior, that behavior was recorded. Then the researcher chose and implemented one of the discipline strategies. On the daily log, the researcher recorded which strategy was used, why the strategy was used, and how much success the teacher had with the particular strategy (once again, success being rated on a 10-point scale). Instruments are presented in Appendices A through D.

Procedures. Prior to research, a survey was completed by the researcher's cooperating teacher. The survey asked questions regarding effective and ineffective discipline methods with which the teacher had personal experience. Upon completion of the cooperating teacher survey, observation and experimentation began. The first week was spent observing the cooperating teacher and her classes. Notes were made regarding any off-task behaviors, how the teacher attempted to solve the behavior problem, and the success of the action. All notes were recorded on the observation logs.

Using the information gathered from the cooperating teacher survey, as well as the observations made, the researcher experimented with different discipline methods. During week 2, the researcher took control of all classes. Lesson plans were implemented, and, when discipline problems occurred, different strategies were used. At the conclusion of each class, or after an incident occurred, the researcher recorded the data on the daily log. The daily log required the researcher to record the off-task behavior, the strategy used, the reason for choosing the strategy, and the success of the strategy. At the conclusion of the 2-week research period, the researcher gathered

and compiled all of the information.

Instructional Plan

After looking at all of the available data (cooperating teacher questionnaire, literature review, and observation logs), the researcher determined which strategies would be utilized during the 1-week experimental period. For minor discipline problems, the researcher planned to use two methods to combat the situation: (a) address the student's behavior in front of the entire class, or (b) pull the student to the side and address the behavior privately. For continued offenses or major offenses, the researcher planned to use one of three methods: (a) having the student sit out during the activity until he or she felt capable of following directions, (b) having the student sit out for a portion of the activity, or (c) having the student sit out for the remainder of the class. The researcher also had the option to not react to the situation and do nothing.

<div align="center">

Results

</div>

Questionnaire

The questionnaire that the cooperating teacher filled out contained questions that focused on strategies that she considered successful or unsuccessful, depending on her personal experiences. This important was important in that practical experience is the best way to determine the effectiveness of a particular strategy. The cooperating teacher listed three successful strategies: speaking with the student to the side, having the student sit out for a portion of the activity, and giving that student a leadership role. There were also three unsuccessful strategies: yelling at the student in front of the entire class, having the student complete a behavioral contract, and having

the student write sentences.

Each effective strategy was further explained. Speaking with the student to the side was listed as an effective strategy because the teacher has the opportunity to directly correct the behavior, while minimizing embarrassment and attention. Have the student sit out for part of the activity was listed as effective because it allows the student to see how bad choices have negative consequences. The most effective strategy, as viewed by the cooperating teacher, was creating a leadership role for the off-task student. This strategy indirectly gives the student a sense of importance and an obligation to act correctly. A leadership role is great for students who are acting out just to receive some attention; it is also effective in dealing with a group of students acting up.

There were also three unsuccessful strategies that were identified by the cooperating teacher. The first strategy was yelling at the student in front of the entire class. The cooperating teacher found that, the majority of the time, this strategy actually increased the likelihood of the behavior occurring again because it was giving the student added attention. Behavioral contracts were considered ineffective because the students are only completing it because they must; there is no sense of ownership and the students just forget. Finally, writing sentences was deemed unsuccessful because some students would rather sit out and write, rather than participate. So, some students will purposely get into trouble so that they do not have to participate.

Observations

The researcher spent 1-week observing the cooperating teacher in the field.

Observations were made during each physical education class in Grades 3-5. For each off-task occurrence, the researcher recorded the off-task behavior, the strategy that was used, and the success of the strategy. As displayed, in Figure 1, there were a total of 44 off-task behaviors during the course of 1 week amongst all three of the grade levels.

	Strategy						Total
Off-Task Behavior	A	B	C	D	E	F	al
Excessive Talking	5	8				3	**16**
Horse-Play	2	5		3	1		**11**
Lack of Participation		1					**1**
Hitting			1		2		**3**
Disregarding Rules	3	2	2		2	1	**10**
Touching Equipment w/o Permission	2	1					**3**
Total	**12**	**17**	**3**	**3**	**5**	**4**	**44**

Figure 1. Observation week. Strategies used in dealing with off-task behaviors (number of occurrences for all grades, 1 week). See Appendix D for strategy codes.

The cooperating teacher most commonly dealt with unnecessary or excessive talking. To deal with this particular off-task behavior, the teacher most commonly used Strategy B: "Addressing the Student About the Behavior Privately" (pulling the student to the side of the class and talking to him or her). Not only was this strategy most commonly used to deal with excessive talking, but the teacher used this strategy to deal with the majority of the other discipline problems, as well.

There were a few trends that the researcher noticed during the observation period. First, the more serious the behavior, the more likely the teacher was to have the student sit in time-out for a portion or the remainder of class. For instance, when a student hit another student, the teacher wasted no time talking with the student, she immediately had the student sit in time-out. Also, the researcher noticed that, when

the teacher used Strategy A, "Addressing the Student About the Behavior in Front of the Whole Class," many times, it was ineffective, and an additional strategy had to be used (see Figure 2).
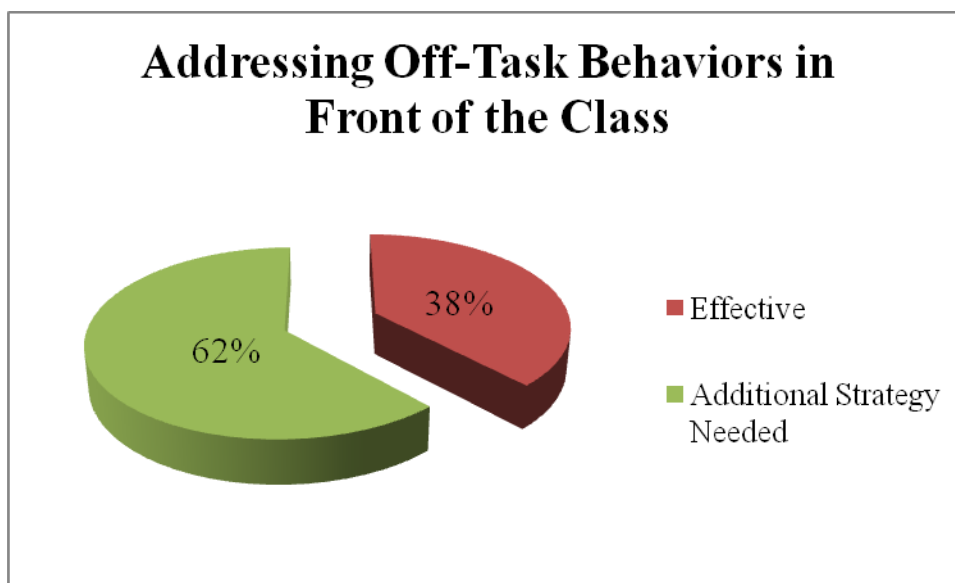

Figure 2. The success rate of Strategy A, "Addressing Off-Task Behaviors in Front of the Class."

Experimental Teaching

At the conclusion of the observation period, the researcher had the opportunity to take control of all of the physical education classes. Using the information that was obtained from the observations in the prior week, the researcher experimented with the different strategies in dealing with the different off-task behaviors, as shown in Figure 3.

Strategy

Off-Task Behavior	A	B	C	D	E	F	Total
Excessive Talking	3	8			1	2	**14**
Horse-Play	3	2	1	1			**7**
Lack of Participation		2					**2**
Hitting		1	1		2		**4**
Disregarding Rules	2	2		1	2	1	**8**
Touching Equipment w/o Permission	2	4				1	**7**
Total	**10**	**19**	**2**	**2**	**5**	**4**	**42**

Figure 3. Implementation week. Strategies used in dealing with off-task behaviors (number of occurrences for all grades, 1 week). See Appendix D for strategy codes.

Excessive and unnecessary talking remained the most common offense during the implementation week. Having already seen the success of Strategy B, the researcher continued to pull students to the side and discuss the behavior with them privately. This strategy was also used primarily with students who refused to participate, disregarded rules, and touched equipment without permission.

During the implementation week, an entire class was behaving wildly and engaging in rough play, so the teacher addressed the issue in front of the entire class. Since this was a major offense, the class had to sit in time-out for 10 minutes before returning to the lesson. The time-out did positively affect the students' behavior for the remainder of the class. The other instance in which the time-out strategy was effective was when dealing with students who were hitting each other. However, in these cases, the students were told to sit out for the remainder of class.

Conclusions and Recommendations

Conclusions

The findings from each of the research tools suggest that particular discipline strategies are effective for different types of situations. When dealing with minor, off-task behaviors, the most effective strategy is to pull the student to the side and discuss

the behavior in a private manner. When dealing with more serious discipline problems, this strategy is less effective; it is more appropriate, in these types of situations, to have the student sit out for a specified amount of time.

The only situation in which addressing an issue in front of the whole class was effective, was when the majority of students were partaking in the off-task behavior. During an instance where only one student was off-task, it was ineffective and inappropriate to discipline the student in front of the entire class. Of the three time-out options, the most effective was the partial time-out that was determined by the teacher. At the elementary school age, the students proved to be too immature to manage their own time out. On two occasions, the student would sit out for a very short time period and rejoin the class, only to repeat the same off-task behavior. When the teacher asked the student to sit out for the remainder of the activity, the student had time to process the wrong behavior and learn from his or her mistakes. When the student rejoined the class, he or she remained on task for the rest of the day.

There were mixed findings in using the first step of the Least Approach. On one hand, by not immediately correcting an improper behavior, the students had the opportunity to correct themselves and take responsibility for their actions. However, in most cases, the behaviors quickly escalaed, and additional strategies had to be implemented. The most positive aspect of the first step of the Least Approach was that the teacher was able to refrain from constantly correcting behaviors and give the students a small amount of independence.

Recommendations

It is important to note that only a select few strategies were tested during the experimental phase of the research study; these strategies were chosen due to the suspected effectiveness of the methods. This does not mean that all other strategies are ineffective. For this reason, researchers should test the effectiveness of other discipline strategies. The strategies that were used could also be tested in different content-areas and classroom environments.

The purpose of this research project was to identify the most effective strategy in dealing with off-task student behaviors in elementary physical education. While the research questions of this study were answered, the findings also created additional questions and needs for further research studies. Further research should be conducted regarding the conditions that cause greater amounts of discipline problems.

For instance, there were days during the study that had higher incidences of off-task behaviors and discipline problems. What caused this phenomenon? Possible connections could exist between weather events, day of the week, upcoming holidays, and classroom environment, but, further research is needed to confirm this information.

Another relationship that would be worth researching is the relationship between preventative classroom management strategies and the use of discipline strategies. It seems as though effective classroom management would decrease the need for discipline strategies. Would high levels of classroom management increase the effectiveness of discipline strategies? This additional information would be helpful for teachers to know.

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Appendix A
Cooperating Teacher Survey

1. How many times do you have to address discipline issues during an average day?

2. List three **unsuccessful** strategies of addressing discipline problems in dealing with off-task students.

    a. Method 1.

    b. Method 2.

    c. Method 3.

3. Why were these strategies **unsuccessful**?

    a. Method 1.

    b. Method 2.

    c. Method 3.

4. List three **successful** strategies of addressing discipline problems in dealing with off-task students.

    a. Method 1.

    b. Method 2.

    c. Method 3.

5. Why were these strategies **successful**?

    a. Method 1.

    b. Method 2.

    c. Method 3.

6. Additional comments.

Appendix B
1-Week Observation Form

Date:

Class/Grade:

Lesson Focus:

Tally of Off-Task Behaviors:

Off-Task Behavior   Strategy Used   Level of Success*
Comments

***Level of Success is graded on a scale from 1 through 10, 1 being the lowest degree of success and 10 being the highest degree of success.**

Date:

Class/Grade:

Lesson Focus:

Tally of Off-Task Behaviors:

Off-Task Behavior   Strategy Used   Level of Success*
Comments

***Level of Success is graded on a scale from 1 through 10, 1 being the lowest degree of success and 10 being the highest degree of success.**

Appendix C

1-Week Implementation Log

Date:

Class/Grade:

Lesson Focus:

Tally of Off-Task Behaviors:

Strategy   **Reason for Choosing Strategy**
Level of Success*

*Level of Success is graded on a scale from 1 through 10, 1 being the lowest degree of success and 10 being the highest degree of success.

Date:

Class/Grade:

Lesson Focus:

Tally of Off-Task Behaviors:

Strategy   **Reason for Choosing Strategy**
Level of Success*

*Level of Success is graded on a scale from 1 through 10, 1 being the lowest degree of success and 10 being the highest degree of success.

Appendix D
Strategy Codes

Strategy Codes were utilized in each of the graphs that depicted data from the

research study. These codes can be found in Figure 1 and Figure 3. The following

chart matches the strategy code with its perspective discipline strategy.

Strategy Code	Strategy
A	Address the Behavior Publicly
B	Address the Behavior Privately
C	Student Sits Out Until Ready
D	Student Sits Out Portion of Activity
E	Student Sits Out Entire Activity
F	Do Nothing (Least Approach: 1st Step)

Better Learning Through Classroom Communities

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Education 590, Spring 2009

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Introduction to the Problem

Students in modern schools have been indoctrinated with a philosophy of competition. They are taught that they should strive to be the top student in the class – to get the best grades, despite whether or not they have been engaged in learning and understanding the subject. This philosophy puts emphasis on the wrong aspects of education. While we want our students to be motivated, we want that motivation to come from an interest in a subject and a desire to learn, not from a desire to "beat" other students.

How are we to inspire students to care about the subjects they are studying, and, also, about the educational progress of the class? The answer may lie in a return to communal learning. For several years, teachers have been advocating the use of group work in the classroom. Group work allows students to develop problem-solving skills, as well as providing an opportunity for teamwork. In addition to group work, the Socratic method has been used in Socratic seminars, which encourage all students to engage in conversation, and pose problems and solutions related to the subject matter they encounter.

Communal learning through group work and Socratic seminars remove the emphasis from individual student progress and focus, instead, on the progress of the class, as a whole. The class is then able to form a spirit of community where students know, not only their responsibility to themselves, but also realize the part they play in the educational experience of their fellow classmates.

This study will examine the progress made in a classroom when communal learning techniques are used, rather than traditional, individual-based techniques. My own interest in this topic was piqued due to personal experiences I had while in high school. Most classes had a lecture and response structure. The teacher would lecture, and then we would be given

assignments. I noted a heavy level of competition among those students who were in the top percentiles of the class. These students knew they were in the running for top honors upon graduation, and they seemed more interested in rising in class rank than in mastering the material being taught. The other students in the class fell into two groups: (a) those who did well in their studies and were interested in the subject; and (b) those who knew they would never be in the top percentiles of the class and, therefore, remained content to allow the top students to monopolize the class discussions.

While at university pursuing my undergraduate degree in English, I was introduced to the Socratic seminar. I saw that, when students were encouraged to form a community, rather than an "every man for himself" atmosphere, the students seemed more at ease, and the lessons being taught seemed to flow naturally, and be absorbed in a more universal manner. I wondered what such a structure could accomplish in a high school classroom. How would those top students I had known react to the concept that they were, not only responsible for their own grades and class rank, but, also, for contributing to the learning experience of the rest of the class?

The purpose of this study will be to compare the progress of students in a communal classroom to those in a traditional class. The study will be completed in two sections of English I, a ninth-grade course. One section will be structured according to traditional methods, and the other will utilize group work and Socratic seminars, along with nontraditional learning practices specifically designed to build a sense of community within the classroom.

The Tennessee State English Standards for ninth grade will be used, along with the county standards mandated by the school system. The benchmarks used will be for the ninth grade, and will involve comprehension, literary analysis, and written composition. The unit of study will center around John Knowles' novel, *A Separate Peace.*

Review of Literature

In recent years there has been a great surge in the use of Socratic methods in high school classrooms. These seminars allow students to have greater control over the success and direction of their classes. Students should be able to see that they have a responsibility for bringing about the changes in classes that they wish to see. In her study of change in the classroom, Miller (2005) states that she, "…hope[s] that [her] students will recognize their own power in effecting and cultivating change in the classroom and that it becomes part of their critical consciousness" (p. 540).

These communal classrooms open the lines of communication and are also "consistent with sociocultural models of learning and response-based theories of comprehension" (Berne & Clark, 2006, p. 674). Students help each other to construct meanings, and add to information stocks for the classroom, as a whole. In order for students to develop strategic comprehension processes, Berne and Clark (2006) note that the following must occur:

- Students must engage in connected talk with one another about their ideas.

- Students must be taught to engage in dialogue with one another about text.

- Students must be taught how to employ comprehension strategies to assist themselves and group members as they collaboratively puzzle through ideas in the text. (p. 680)

The importance of group work has been seen, over and over again, in studies of educational effectiveness. In a study at an urban school, the teachers were asked what they wanted from their classes. They replied, "…what we really want these kids to do is to seminar on an everyday basis in their classes and be able to discuss and learn and get involved with their studies…"(Polite & Adams, 1997, p. 256) Socratic seminars have been shown to increase

students' problems solving skills and help them learn to think critically about concepts. Tredway (2000) found, in her study, *Socratic Seminars: Engaging Students in Intellectual Discourse*, that:

> As students consider different – and often conflicting – ideas, they 'make meaning,' that is, they think deeply and critically about concepts: look at ethical quandaries, and develop moral principles. They thereby refine their critical thinking skills and deepen their collective understanding of the material they discuss – the main objectives of the process. (p. 1)

It has become increasingly clear that students are not engaged in constructive ways by traditional lecture methods. If we wish our students to do more than memorize information, we must make sure that they can become engaged with a text. We must, also, make it clear that the teacher is simply a guiding force, and that students have the power to create a successful learning experience.

Data Collection and Results

Data Collection

Description of Project Membership

This study will be conducted among ninth-grade students in a public high school. These students range in age from 14 to 15 years of age. Students are assigned to classes according to the regular scheduling plan.

Research Design

This study will take place over approximately 2 weeks in a ninth-grade English classroom. The purpose of this study will be to see whether competition-based classrooms are more successful than those based on Socratic methods. The size of the classes will number from 20 to 30 students, and will include students of both sexes and a variety of backgrounds and

ability levels. One class will be structured along the lines of a traditional, lecture-based classroom. The other class will be arranged as a Socratic seminar-based classroom. Students will actively engage in discussions and will be expected to solve problems based on the text they are discussing.

Students' grades will be measured and compared with those of similar students in the other class. In addition to student research, parents will also be surveyed to find out if their children have shown any additional interest at home, concerning the class or the texts being used.

Instrumentation and Data Collection

Data will be collected on a regular basis through the comparison of grades based on similar tests (see Appendix A) and a written assignment (see Appendix B). The class averages will be computed and compared after every major assignment. Individual students will be compared to similar students in the opposite class.

Instructional Plan

The basis instructional plan for both the control and the test classes will be as follows:

Lecture-Based, Competitive Classroom

I. Introduction of text.

II. Lecture on background and author.

III. Assignment of first chapters – lecture to follow.

IV. Test on first chapters.

V. Assignment of second chapters – lecture to follow.

VI. Test on second chapters.

VII. Assignment of third chapters – lecture to follow.

VIII. Test on third chapters.

       IX.   Writing assignment based on text.

Socratic Seminar-Based Classroom

       I.   Introduction of text.

       II.   Brief lecture on background and author.

       III.   Students asked to research and discuss the author and background.

       IV.   Assignment of first chapters.

       V.   Socratic seminar on first chapters.

       VI.   Test on first chapters.

       VII.   Assignment of second chapters.

       VIII.   Socratic seminar on second chapters.

       IX.   Test on second chapters.

       X.   Assignment of third chapters.

       XI.   Socratic seminar on third chapters.

       XII.   Test on third chapters.

       XIII.   Written assignment based on text.

Results

Test Scores

Figures 1 through 3 show the test scores of students in the traditional, lecture-based classroom.
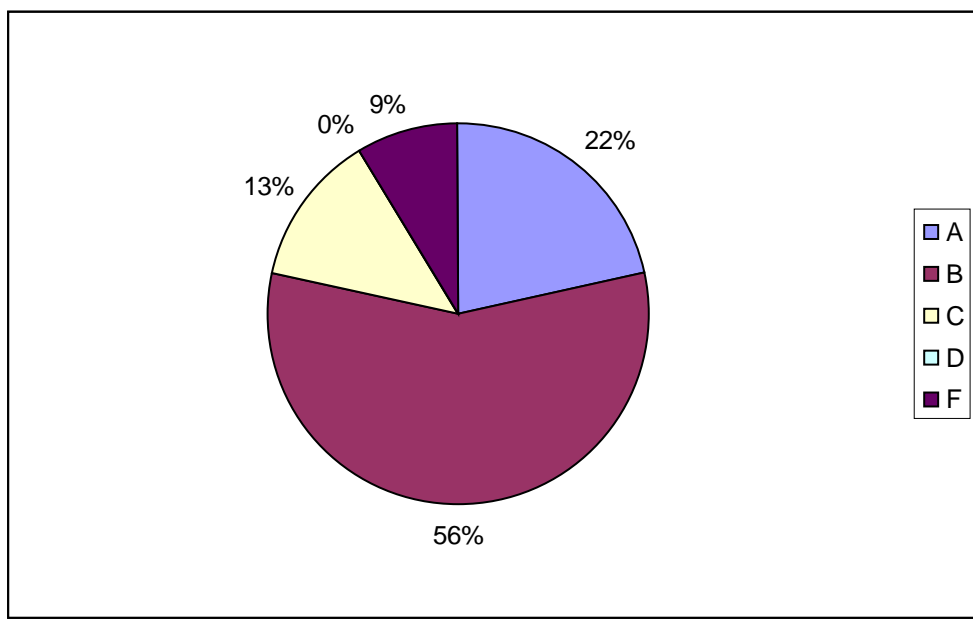
Figure 1. Percentage of scores on the first chapters test in the lecture-based class.
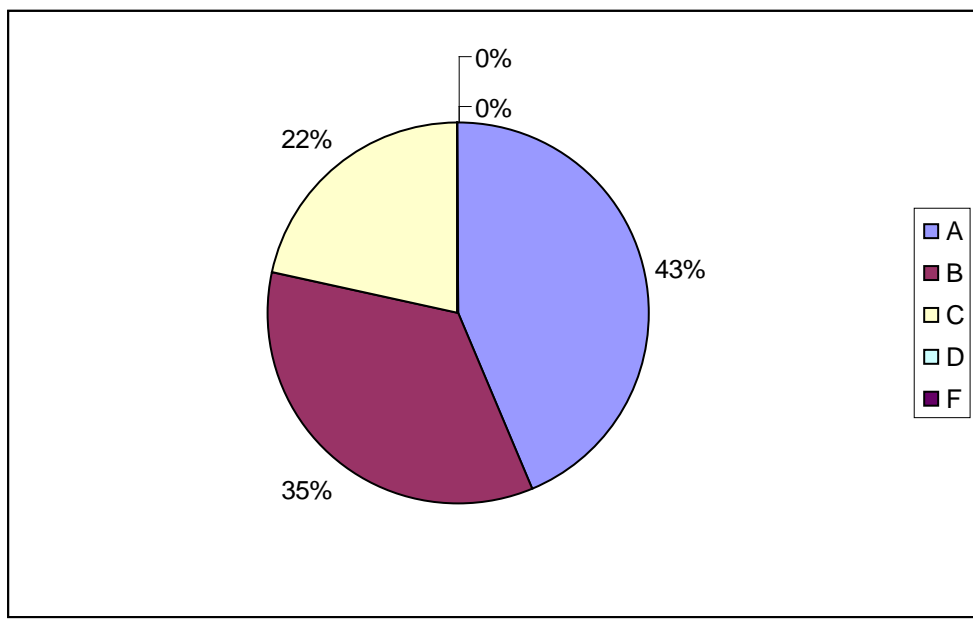
Figure 2. Percentage of scores on the second chapters test in the lecture-based class.

Legend:
- A
- B
- C
- D
- F

Pie chart values: 4%, 0%, 4%, 53%, 39%
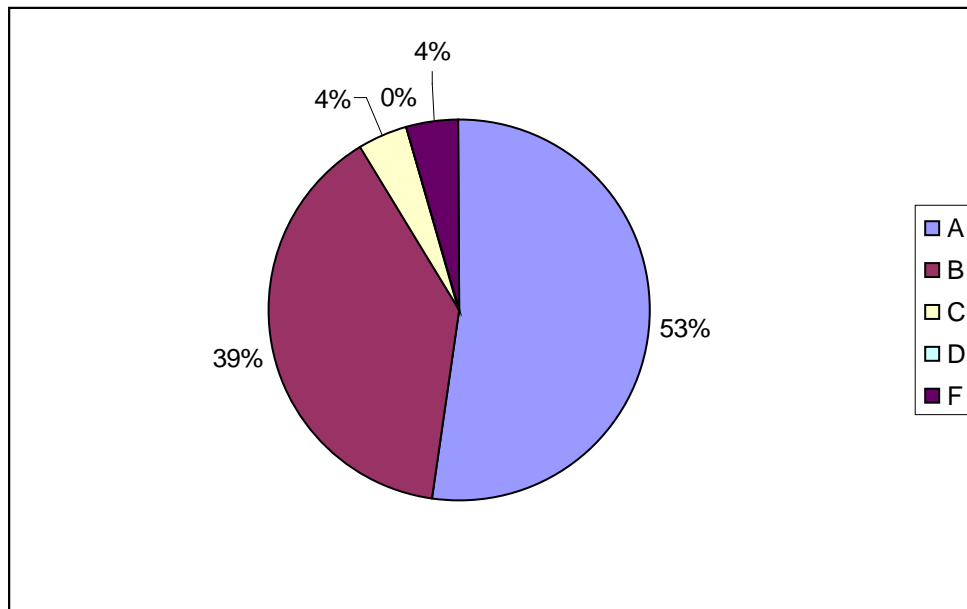
Figure 3. Percentage of scores on the third chapters test in the lecture-based class.

Figures 4 through 6 show the scores of students in the Socratic seminar-based classroom on tests. As can be clearly seen, the students in the Socratic seminar-based class performed better on all three chapter tests. Although students in the lecture-based class had adequate scores, they were not as high, on average, as those of the seminar-based class.
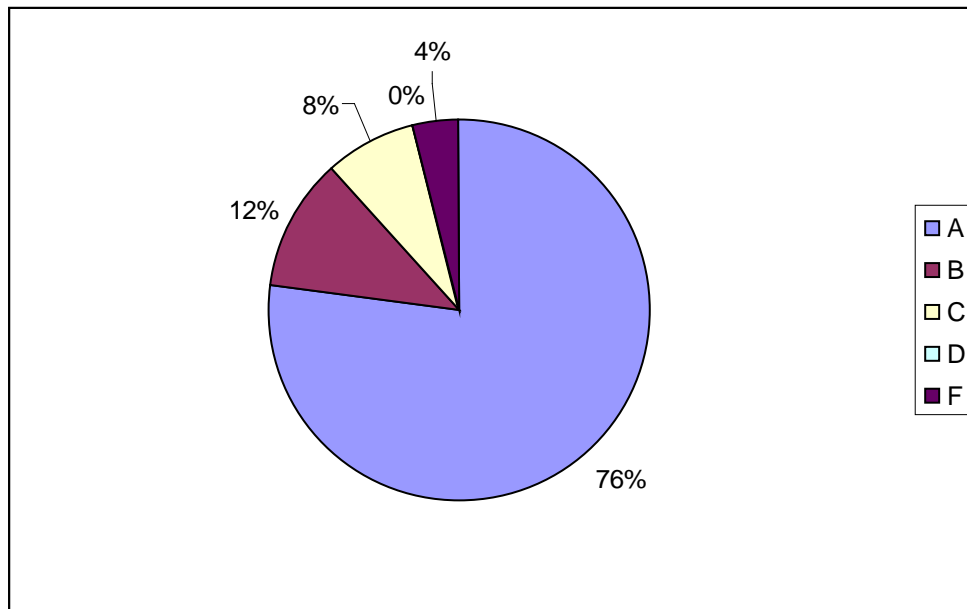
Figure 4. Percentage of scores on the first chapters test in the Socratic seminar-based class.
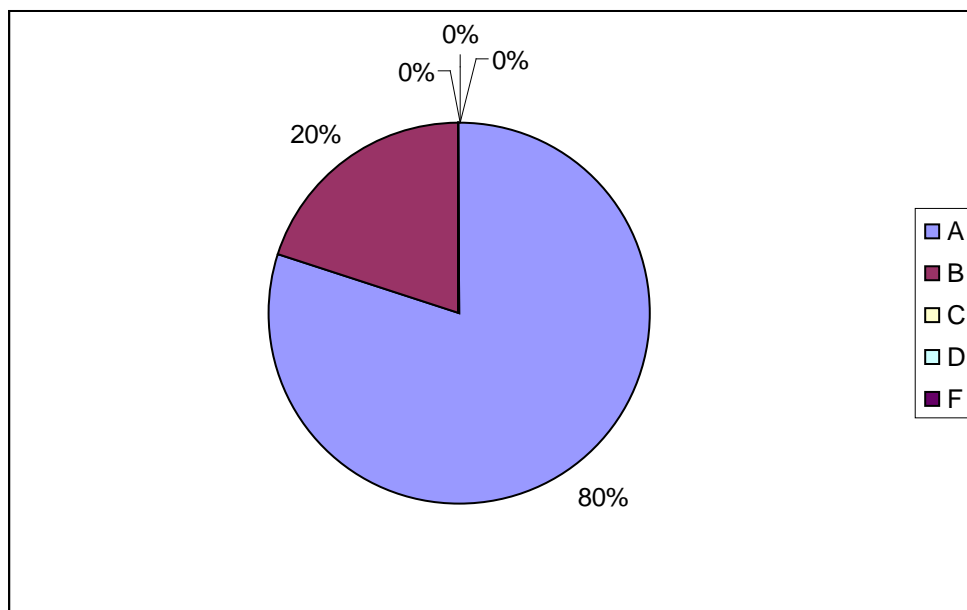
Figure 5. Percentage of scores on the second chapters test in the Socratic seminar-based class.
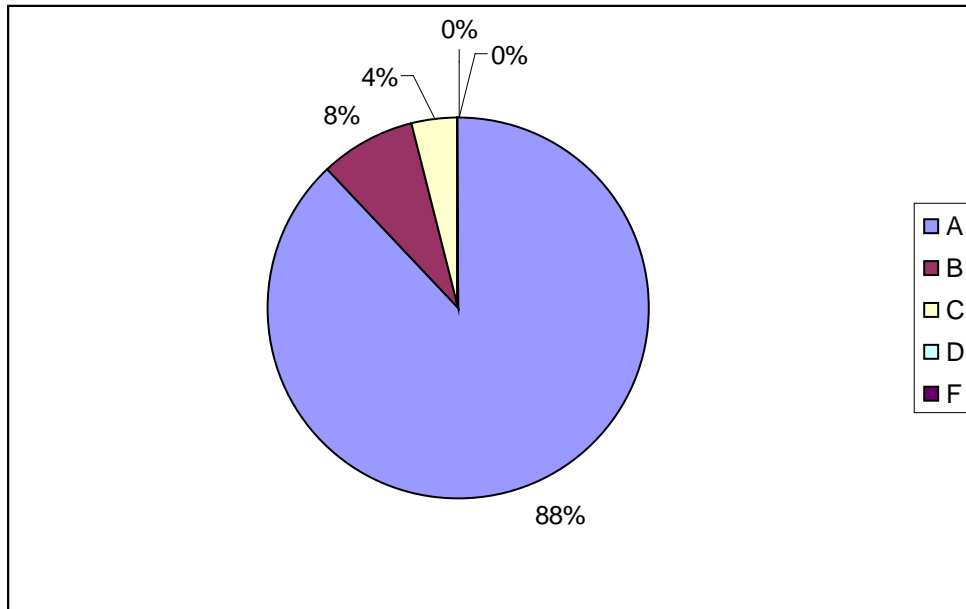
Figure 6. Percentage of scores on the third chapters test in the Socratic seminar-based class.

Written Assignment

After the novel was completed, students were assigned a writing project based on the novel, as a whole. They were asked to demonstrate their understanding of the literature and to display critical thinking skills. Figures 7 and 8 display the scores earned on this assignment. As can be seen, students in the Socratic seminar-based class performed better on the assignment.

Written Assignment
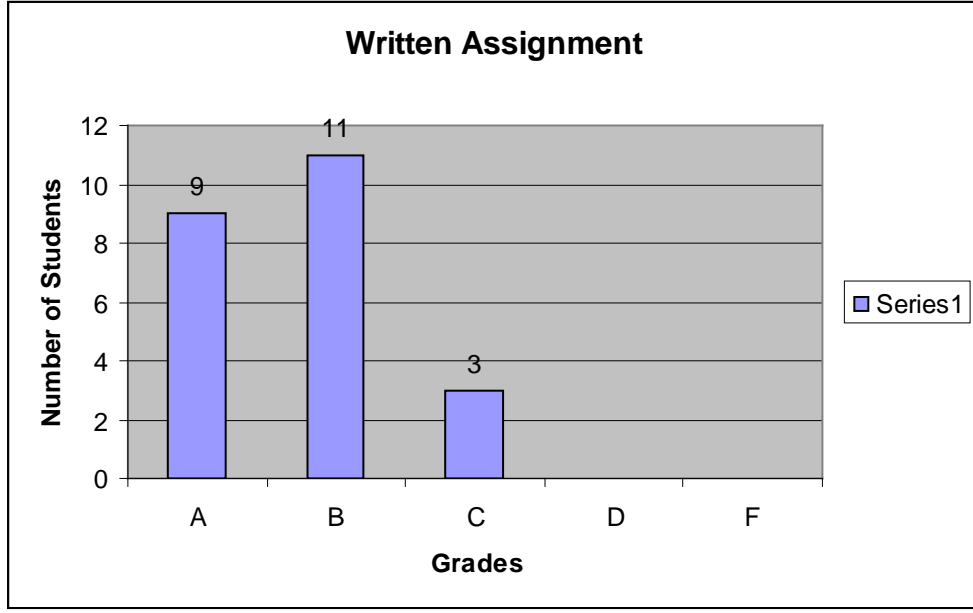
Figure 7. Written assignment scores in the lecture-based classroom.

Written Assignment
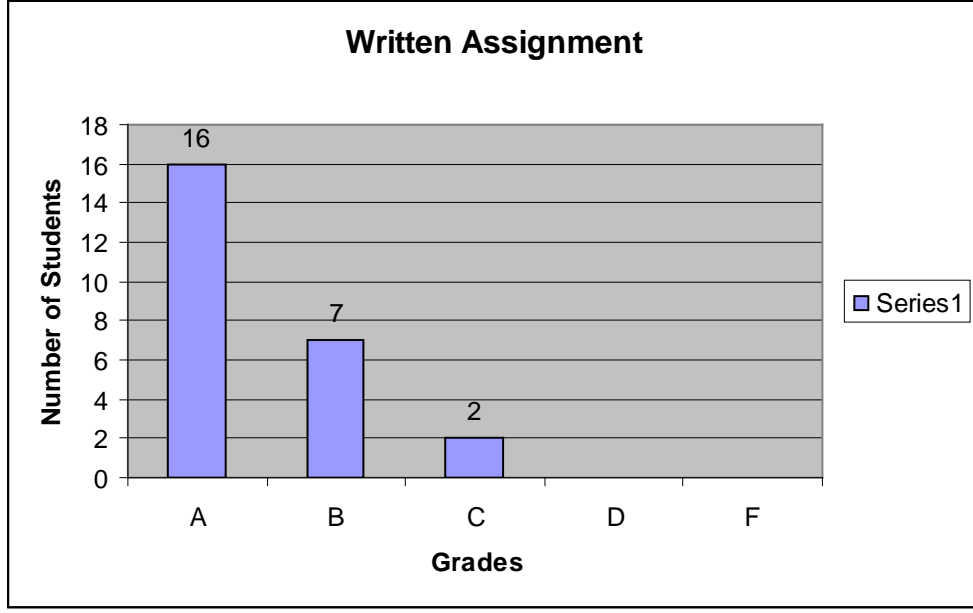
Figure 8. Written assignment scores in the Socratic seminar-based classroom.

Conclusions and Recommendations

Based on the results of this study, classes structured around a traditional, lecture-based

curriculum, while effective, are not as effective as those which utilize the practice of Socratic

seminars. Students who are encouraged to participate in such seminars realize that they are responsible for the quality of their classes. They know that, if they are not prepared for the discussion, then they will not have anything to contribute to the group. This sense of responsibility drives students to succeed and to form a learning community. The NCTE affirms that students placed in learning communities based around discussion and open questioning – whether through Socratic seminar or through other structured discussions – are caused to think deeper and to articulate their views in a manner that is understandable by their peers. Teachers should receive training in adapting the Socratic style to their classrooms. This style is often used in colleges and universities, and students who experience it while in high school are better prepared for the rigors of continuing their education. In order to prepare teachers to teach with this style, schools might suggest any number of books on the topic that have been written in recent years. As of now, there do not appear to be any grants geared specifically toward encouraging the use of Socratic seminars, however, proposals for teacher development may be funded through NCTE grants, as well as through private organizations such as the Rural Teachers Network, through the University of the South, at Sewanee, Tennessee. Because Socratic seminars are largely discussion based, there aren't as many roles for technology to play in the process. However, students can be encouraged to seek out critical articles online, and could, also, interact with students from other areas through chat programs and message boards.

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Appendix A

A SEPARATE PEACE – TEST 1
1. What two sites did the narrator go back to see at Devon?

2. Who is Phineas?

3. What unusual thing did Phineas talk Gene into doing?

4. Why were the boys not punished for jumping out of the tree?

5. Identify Mr. Prud-homme and Mr. Patch-Withers.

6. What was the Super Suicide Society of the Summer Session?

7. Gene said, "I didn't need to feel any tremendous rush of gratitude towards Phineas." Why not?

8. Why did Gene continue jumping out of the tree and going along with Phineas even though he didn't want to?

9. What was blitzball?

10. In what way does Gene describe his memories of the war years?

11. What does the swimming record incident show about Phineas?

12. "Exposing a sincere emotion like that at the Devon School was the next thing to suicide."What had Phineas just told Gene?

13. What two realizations does Gene have about his relationship with Phineas?

14. Over what did Gene and Phineas argue?

15. What happened to Phineas?

16. Why didn't Gene tell Phineas the truth (that he bounced on the limb and caused the fall) at theinfirmary?

17. What is Phineas' reaction when Gene does confess?

18. "If you broke the rules, then they broke you." What did Gene mean?

19. Identify Cliff Quackenbush.

20. How did Gene lose his job of Assistant Crew Manager?

21. From whom was Gene's long-distance call?

22. Why did Gene feel a sense of freedom when Phineas said, "Listen, pal, if I can't play sports, you're going to play them for me"?

23. What idea does Brinker Hadley introduce?

24. Why did Gene leave the Butt Room without smoking a cigarette?

25. What "good deed" did the boys do?

26. What does Gene say about Brinker as he tries to spare Leper's feelings when the gang meets him after the railroad work is done?

27. Who decided to enlist?

28. Why did Gene not enlist?

A SEPARATE PEACE – TEST 2

1. Of what did Finny try to convince Gene about the war?

2. For what event did Finny want to train Gene? What was wrong with that plan?

3. Why did Phineas decide that Mr. Ludsbury didn't know the war was just propaganda from fat old men?

4. Who was the first of Gene's gang to actually enlist?

5. What effect did Leper's enlistment have on the boys at Devon?

6. What winter event did Phineas invent?

7. From whom was Gene's telegram, and what was the message?

8. What happened to Leper?

9. How did Gene react to Leper's description of what happened to him?

10. Why did Gene want to see only Phineas?

11. Brinker said, "What's the matter with our class anyway? It isn't even June yet and we've already got two men sidelined for the Duration." Who was he talking about? For the duration of what?

12. How did Leper's illness affect Phineas?

13. Contrast Brinker's view of Finny's disability with Gene's view.

14. Where did Brinker take Gene and Finny? Why?

15. Why did Finny rush out of the room?

16. What happened to Finny after he ran out of the room?

17. Why didn't Gene do anything to help with Phineas after his second accident?

18. Why did Gene sneak into the infirmary?

19. Gene told Phineas, "you wouldn't be any good in the war, even if nothing had happened to your leg." What did he mean?

20. What finally happened to Phineas?

21. What was ironic about Gene's part in the war?

SHORT ANSWER UNIT TEST 3 - *A Separate Peace*
I. Matching/Identify

1. Brinker   A. Author
2. Devon   B. The river
3. Fat Men   C. He fell out of the tree & broke his leg
4. Gene   D. Made up the war
5. Knowles   E. Summer Head Master
6. Leper   F. Went AWOL; First to enlist
7. Ludsbury   G. Substitute master
8. Naguamsett   H. Crew manager of the rowing team
9. Patchwithers   I. Didn't know the war was propaganda because he was thin
10. Phineas   J. He said the accident was Gene's fault
11. Prudhomme   K. Location/Name of the school
12. Quackenbush   L. Narrator

II. Short Answer
1. What two sites did the narrator go back to see at Devon?
2. What was the Super Suicide Society of the Summer Session?
3. What was blitzball?
4. What two realizations did Gene have about his relationship with Phineas (prior to Phineas' accident)?
5. "If you broke the rules, then they broke you." What did Gene mean?
6. Why did Gene feel a sense of freedom when Phineas said, "Listen, pal, if I can't play sports, you're going to play them for me"?
7. What effect did Leper's enlistment have on the boys at Devon?
8. Brinker said, "What's the matter with our class anyway? It isn't even June yet and we've already got two men sidelined for the Duration." Who was he talking about? For the duration of what?
9. Contrast Brinker's view of Finny's disability with Gene's.
10. Gene told Phineas, "You wouldn't be any good in the war, even if nothing had happened to your leg." What did he mean?

III. Composition
What is the point of *A Separate Peace*? When we read books, we usually come away from our reading experience a little richer, having given more thought to a particular aspect of life. What do you think John Knowles intended us to gain from reading his novel?

IV. Vocabulary
Listen to the vocabulary words and write them down. Go back later and fill in the correct definition for each word.
1.
2.
3.

4.
5.
6.
7.
8.
9.
10.

Appendix B

Writing Assignment

For this essay – you will choose one of the following topics and write a well-thought, critical

analysis of *A Separate Peace*.

Please let me know what topic you have chosen before you begin your paper – I may be able to

give you some advice about where to begin.

- Trace the images of games and war through the novel. What might John Knowles be

    commenting upon with these themes?

- Compare the characters of Gene, Phinny and Leper. Explain what archetypes they

    represent and how these fit into the overall purpose of the novel.

- Explain whether John Knowles intends Phinny to be a sympathetic character – or whether

    he intends to plant the same seed of dislike/jealousy/hate that we suspect within Gene.

The Effects of Integrating Hands-on Learning Activities to Develop a Better Comprehension of

Curriculum in High School Biology Classes

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Introduction to the Problem

Over the past 20 years, the world has seen great leaps in scientific discoveries. Despite these discoveries, interest in science classes among younger generations has waned. This could be the result of the material itself, or the ways in which the material is presented. Traditional learning approaches tend to lead to "boredom, frustration, and negative perceptions of science" (Paris, Yambor, & Packard, 1998. p. 271). With all of the new scientific discoveries, we need to discover new ways to draw students into the curriculum, while meeting the standards of the curriculum.

I can remember sitting in my science classes and hating every topic discussed. I could not see the relevance of the issues and I constantly felt I was doing busy work to keep me seated quietly. It was frustrating to go to class every day and I hated science. Then came the most wonderful teacher I ever had; she taught me to believe in myself and the relevance of scientific applications, and, most importantly, she made science fun and useful in my life. What did she add to the classroom that made me want to continue my science education in college, and earn my bachelor's degree in biology? This question is where my research topic began. In the period of 1 year, the class was able to do one dissection and one very engaging homework project. I still remember the information from the assignments given. Was it her method of teaching, or the assignments given, that made me remember the information for such a long period of time? In my research, I want to see the effects of interactive activities on student learning in my classroom.

Review of Literature

Studies have found that interest and participation tend to increase when a hands-on curriculum is implemented (Barab, Young, & Wang, 1999; Brooker, 2000; see also Paris,

Yambor, & Packard, 1998). The Minogue and Jones (2006) research study has found that touch encompasses a better sense of understanding for the world around us. While we interact with our surroundings, the sense of touch enables us to modify and manipulate the world around us. Touch enables us to define, not only the outward property of an object, but the inward properties of that object, as well. The National Institute for Education High School program has such a strong belief in using a hands-on style of learning that they have begun a new internship opportunity for students and teachers has begun. The internship allows students and teachers to work in a research lab for the summer. Through hands-on use of the scientific equipment, the students develop a better comprehension of the science curriculum. This research group is not the only group to apply this method of learning. Military training, along with medical trainees, are now undergoing more hands-on training in their fields of study. It has been confirmed that the sense of touch, and participating in an activity, helps to increase the ability of an individual to perform that task in a real-life setting (Minogue & Jones, 2006). If hands-on learning is being used in specific career fields, then what are the possibilities it could hold for complex tasks in our classrooms?

The Barab, et al. (1999) and the Paris, et al. (1998) studies both show that there is a significant increase in comprehension from using hands on learning activities. However, each of these studies varies in the method in which hands-on learning is approached. The Barab et al. (1999) study uses an Internet-based interaction approach, whereas the Paris et al. (1998) study uses hands on exploration through lab activities, experiments and projects. Other studies have shown that there are several factors that help students recall information more readily, such as: personal experience, instructional choices, sense of control, and the ability to work with others (Paris, et al. 1998). If more students are taught using a more hands-on approach, they are more

likely to have a better understanding of the material. Interactive activities allow students a choice, and a sense of control, and it becomes a personal experience for them, as well. Interactive activities allow students to obtain a better understanding of the curriculum. It has also been found that hands-on learning can be a powerful motivator, and draw increased attention to learning (Minogue & Jones, 2006. p. 23).

Many students spend hours of their school day sitting in a seat and answering questions from their textbooks or worksheets. These questions in the textbook and on the worksheet do not allow interaction in the student's learning. "The problem with worksheets is that they rarely ask a child to think creatively or to use the higher order thinking skills of deduction, induction, application, analysis and synthesis" (Church, 2006). Many of the homework assignments consist of continued rote learning from a textbook, or research papers that are only exhausting one format of learning. While there are some students that respond positively to this learning style, I feel there are a great deal of students that would respond more positively to hands-on learning, both inside and outside the classroom.

I intend to incorporate hands-on learning activities that allow the students to build on previous knowledge. The homework assignments I am using will give them a sense of choice and control, while allowing them to be challenged. Hands-on learning activities will also allow for the use of group work activities, peer teaching, and other collaborative activities. Through these hands-on learning approaches, I will attempt to address several research questions:

- How do interactive assignments impact a student's knowledge?
- Will students perceive science more positively when they are engaged in the curriculum?

- Will participation increase when students are assigned more engaging curriculum?

- Will the use of experiments allow students to connect with their personal experience and obtain a better understanding of the curriculum?

- Will students become more participatory in class when interactive activities are assigned?

- Will students be more able to recall information when more interactive activities are given?

- Will students enjoy more engaging curriculum?

I want to know if integrating more hands-on learning activities, inside and outside of the classroom, will result in a students' more thorough comprehension of curriculum in high school biology classes.

Data Collection and Results

Data Collection

Students

I plan to conduct this research in my biology class; it is a 90-minute, semester-long course. Individuals involved in my study will be 10th- and 11th-grade students in a classroom size of 24 individuals, with 16 females and 8 males. I will be teaching in a Title I magnet school. This biology class is an inclusion classroom and does have six students that have IEPs, and some of my activities will require modifications to meet all student needs.

In order to learn whether comprehension increases through the use of hands on learning, I will use triangulation to collect my data. I will use observation, pre- and post-test scores, work quality, and a survey (see Appendix A). I will be an active participant observer and will keep a

log of my observations, noting any paradoxes in my curriculum or major changes in students. I will be paying attention to participation and the increased ability to recall information. As comprehension increases, students should be more willing to participate, should be more readily able to answer questions asked in class, and should recall the information learned on tests. I plan to compare pre-and post-test scores to see if learning has increased after learning through a hands-on approach. I will also be evaluating work quality. If there is an understanding of the concept, then the work quality should increase. For work quality, I will be using teacher observations on their in-class assignments and on projects. Lastly, I will conduct a Likert scale survey that will assess student interest in science. The survey will be given at the beginning and at the end of my study. This will help to determine if student views about science change, based on the how the curriculum is delivered.

Methodology

I would like to create more interactive hands-on learning by incorporating more experiments; interactive activities; and more creative, engaging, and interactive projects for homework. This learning adaptation will require a great deal more time from the teacher, students, and parents.

In the classroom, we will be conducting a lab experiment to correspond with each of the biology sections discussed: one lab for biomolecules of the body, one lab for studying the cell membrane, and one lab for cell transport. Each of the labs has components where the students have free exploration based on previous knowledge; they can test and define a different aspect that they will design experimentally. I feel that students will have a better understanding if they could see why something was taking place and could manipulate different variables to see the results.

Interactive activities will vary, and will range from group activities, graphic organizers, and games that involve interacting learning. Each week, students will work on group activities for 4 days to emphasize major concepts. Students will complete graphic organizers and participate in games on each of the major concepts: biomolecules, cell organelles, and cell transport. The games will also be used for review to help students become better at information recall.

Due to some outside issues occurring within the school, homework projects put a very difficult strain on families, so we will only be able to do one homework project in which students will create a 3-D cell. The students are given some choice in this project because it has to be 3-D, but they can make it however they want, out of whatever they want. It could consist of making an edible 3-D cell, be a sculpting, or be made of styrofoam. The students would have to use their imagination, and focus on the details of the cell, in order to create their versions of the 3-D cell.

It is also important for several factors in the classroom to remain unchanged. It is still important that the students receive instruction from the teacher. The students will receive a lecture each day of the week. There will be interactive activities intertwined within the lectures, to help maintain student interest. Once during every topic, students will complete a lab experiment. Lastly, there will be one engaging homework project.

The expense is minimal in this research study. Most items used in this curriculum are natural resources. However, there is some expense in the lab materials, but all can be bought very inexpensively at any local store. In the event students have difficulty affording the expense of materials for the 3-D project, I will help students identify other alternatives to complete their 3-D projects. First, I would take students on a walk around the school campus for them to collect natural resources. Next, I will keep a box of scrap materials in the classroom for the students to

peruse to find materials they could utilize in the project. Every student will have equal access to resources to complete the project.

Results

I am assessing whether work quality increased, comprehension increased, and participation and interest increased when working on science curriculum, while allowing a more hands-on approach. I tested work quality by using teacher observations. I found that many more students took more time on the hands-on activities and stayed much more focused. Through my observations, I assessed that, not only productivity had increased, but the products produced were well thought out and seemed to include a great deal more of comprehension. I tested whether comprehension of curriculum had increased by using a pre-and post-test. The pre- and post-test contained 16 questions. On the pre-test, the average of correctly answered questions was 5 out of 16. On the post-test, the average of correctly answered questions was 12 out of 16. Based on this information, it appears student comprehension has more than doubled. In order to test whether participation has increased, I used observation. Through observation, I found that, while not all students were participatory in all activities, more students were engaged and participating than usual. One unexpected observation is that students that are normally extremely uninterested and typically behavior problems became much more engaged and participatory than I have previously observed in their behavior. While assessing interest in science, I used a pre-and post-survey. I found that many answers on the pre-and post-survey did not really change. There were three students that went from undecided to agree on a positive interest in science. Otherwise, many of the answers stayed about the same.

Conclusion and Recommendations

Conclusion

There is more technology in today's world and it is becoming more useful in the classroom setting. The military uses hands-on learning, medical schools are using hands-on learning, and more university classrooms are approaching science with hands-on curriculum, as well. Since we see this action research has produced positive results, then it is of great inspiration that students are obtaining knowledge that will not only be useful in science classrooms, but their skills developed in their science classes will easily carry into their other studies. If this method of hands-on instruction is used more often, there appears to be a greater possibility of success in students comprehending a larger percentage of the curriculum, and, more importantly, obtaining a personal connection to the material, which could help them retain the information for a longer period of time. This study could have vast implications in my future classrooms and in the classrooms of my colleagues. I think this research project has had a very positive influence in my classroom. While many of the methods are much more time consuming than the methods of traditional instruction, the benefits definitely outweigh the cost.

Recommendations

Recommendations that I would make to any teacher is to try to get all students to participate in more hands-on assignments. Students enjoy doing projects, labs, and other hands-on activities. Learning and participation has increased, and this method of teaching seems to be more engaging for students that are typical behavior problems.

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Appendix A
Survey

Survey: Answer the following questions stating whether you strongly agree, agree, undecided, disagree, or strongly disagree.

1. I believe science classes teach information I will use in the future.

SA   A   U   D   SD

2. I like science classes.

SA   A   U   D   SD

3. I like having a choice in homework assignments.

SA   A   U   D   SD

4. I dislike doing projects for homework.

SA   A   U   D   SD

5. I remember more information when I do an experiment on the topic.

SA   A   U   D   SD

6. I dislike class experiments.

SA   A   U   D   SD

7. I like problem solving.

SA   A   U   D   SD

8. I believe science is useful in every day events.

SA   A   U   D   SD

9. I dislike research papers.

SA   A   U   D   SD

10. I dislike working in groups for class assignments.

SA   A   U   D   SD

Do Retention Exercises Aid in Increasing Standardized Test Scores?

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Introduction to the Problem

It should be no surprise that teacher colleges and universities preach and encourage the use of "progressive education," which includes educational jargon that attempts to demoralize the use of "rote-learning" in efforts to catapult their "new" educational approach into the public mainstream. The problem, unfortunately, is in practice. Most college professors do not teach in a public school setting, and may, if at best, monitor the situation from afar during short observations or trips to the proverbial wonderland we affectionately know as the public school system. If all students came to school excited with a willingness to learn, any approach would work. Unfortunately, this is rarely the case.

What still remains a fact is the format in which students are tested, which, in most instances, is a standardized, multiple-choice format test. These tests lend themselves to be knowledge, or comprehension-level questioning, as reported by Bloom. This type of questioning generally involves some degree of "rote-memorization" and rehearsal activities. The high school graduation examination test that is administered by the state of Georgia is of no exception, and it has recently come under public scrutiny.

Recently, there have been numerous lawsuits regarding students failing the high school graduation examination that is currently being administered in Georgia. A failing score on this examination results in a failure to graduate, regardless of the number of credits or GPA a student may have. Some students contend that they are tested over material that is learned in the beginning years of high school, yet the examination is not given until the students are high school juniors. The problem is that high school students are failing the required Georgia graduation examination due to the non teaching of retention skills that are ascertained by

rehearsal teaching techniques, which would enable the students to recall information several years later.

To this day, I still write my notes over and over on a piece of paper in order to study for tests that I now take as a graduate student. Was I a poor, innocent victim of my teacher's drill and kill rehearsal activities, or have many teachers, over time, realized that such approaches are effective in aiding long-term retention and recall skills?

It is in my opinion that rehearsal activities have lasted the test of time because such practices work. This is in light of the progressive, educational universities and bodies of thought who preach that "cooperative learning" and "differentiated instruction" are the way to go. I believe that rehearsal activities are absolutely necessary in effectively recalling information on a long-term basis. Being that I am ultimately responsible for my students' test scores as we enter a new wave of accountability, it is in my best interest to find out if rehearsal activities really work in observable and measurable terms.

Purpose Statement

The purpose of this study is to describe the impact of rehearsal teaching techniques on the long-term retention skills of high school students taking the Georgia high school graduation exam. The specific research questions are:

1. Do rehearsal activities aid in a student's ability to retain and recall information on a long-term basis?

2. What are the effects of rehearsal activities on student outcomes?

Importance of the Study

This study is important on both a microscale and macroscale. It is important on a microscale because it will identify whether the use of rehearsal activities aids my students in

recalling information on a long-term basis, which will, in turn, give me a definitive answer on how well my teaching approach has worked. It is also important on a macroscale in that other teachers can be informed of the potential benefits or shortcomings of using rehearsal activities and approaches in their own classrooms. This study will hopefully act as a template in their own action research of their individual classrooms.

Review of the Literature

The current literature almost concurrently agrees that rehearsal activities do work for the purpose of retention and recall, but fail to aid in the areas of comprehension and understanding. Some studies that were reviewed tied another variable with rehearsal activities, making it difficult to determine whether it was the strategy that was tied in or the rehearsal strategy that caused a change.

After reviewing many articles and books, I can summarize the main points that I have found. Rehearsal activities do work; however, in most cases, they are tied with other activities. The rehearsal activities are used, almost, in a scaffolding manner, in many cases. Two, rehearsal activities work best in moderation. There is an apparent overkill threshold lying somewhere between not enough and too much. Rehearsal activities do not aid in building deep understanding that is needed to reach the upper levels of Bloom's taxonomy, but do aid in retention and recall.

The "progressive" schools of thought are not completely wrong, but rehearsal activities do have their place in the educational system, as cited by many who have studied this. Many researchers also contend that, as long as testing is in a standardized format, there will always be a need for rehearsal practice activities in the classroom. Some researchers also believe that rehearsal is a necessary component of the educational system, regardless of the format of testing.

Data Collection and Results

Perhaps I do not know the meaning of variable in the contextual relationship of education; however, as a somewhat trained scientist, I can conclusively say that there should always be only one variable for every problem that you have. Otherwise, you cannot tell if the intervention or "experimental treatment" actually was the causation for your noted results. My variable, in this case, is the use of rehearsal activities. This will be the only change from one classroom (experimental) to the other classroom (control).

I will be using the same pre-test and post-test to measure any change in knowledge acquisition. The test I am using was downloaded from the Georgia Department of Education Web site, which is the released, 2004 version of the Biology end of course test. This is the test that my students are required to take upon the conclusion of my class, and it accounts for 15% of their grade. It is guided by GPS standards and serves as the best practice test that is available that compares to the actual test.

Participants

This action research plan will be conducted within my own classroom during spring semester 2009. I will be comparing two different College Prep Biology classes. There are 24 students in each class, for a total of 48 participants. The average biology student is of sophomore class status, with a mean age of 16. My classes are 98% Caucasian and 2% other ethnicities.

I feel that it is important to note that my high school has historically done very well on standardized tests, including the high school graduation examination; however, the science component is the lowest percentile for students, on a whole, in both our school, as well as our county school system. It is my personal goal to try to increase this portion of the test scores being

that this is the area over which I have the most control. This is the basis of my reasoning, as well as my action research plan.

Materials and Time Commitment

I will need the following materials, in accordance with my action research:

- Rehearsal curriculum—This will include activities and rehearsal activities that repeat and emphasize the material that was introduced in class. Essentially, one class of students will repeat and reinforce the words and concepts learned in class, whereas the other class will be doing more labs and self-paced activities that do not include direct teacher to student rehearsal techniques. I plan to spend 30 minutes per day for 4 weeks to guide one of the classes through the rehearsal activities.

- I will be using a pre-test and post-test to determine if an increase in core subject knowledge has been ascertained throughout the semester. The test given is the 2004, released version of the Biology end of the course test that has been released by the Georgia Department of Education.

Procedures

Data collection will only be at the beginning and end of the study. The pre-test and post-test scores will be compared against each other to check for an increase in understanding.

The data collected will be used to answer my initial research questions. I believe that I will be able to provide valuable insight, once my data has been analyzed, evaluated for possible errors, and compared against my original measurable goals.

Results

I gave the same pre-test and post-test to determine knowledge acquisition. After

analyzing the pre-test results, there seems to be a slight difference in the beginning knowledge of

the two classes (see Figure 1). The test is broken into the following five subtopics: cells,

organisms, evolution, ecology, and genetics. The data is based on the percentage of correct

questions for each individual subtopic. It appears that the 1st period Biology class possesses more

prior knowledge than does the 4th period class. With this information available to me, prior to

selecting a class to manipulate using rehearsal techniques, the 4th period was chosen for the

action research and the 1st period was chosen as a control group.

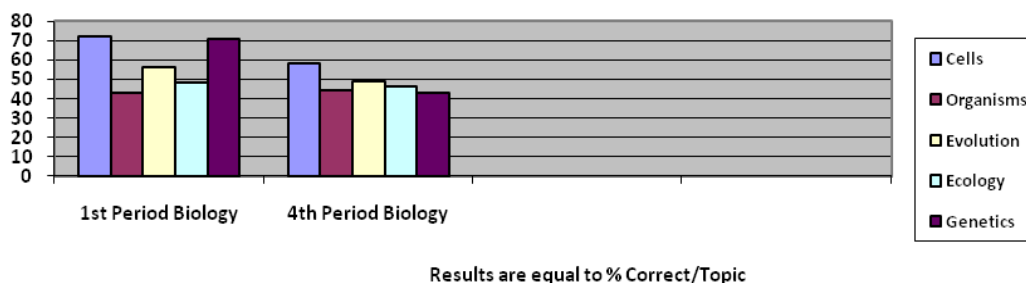|	1st Period Biology	4th Period Biology
Cells	72%	58%
Organisms	43%	44%
Evolution	56%	49%
Ecology	48%	46%
Genetics	71%	43%

Figure 1. Pre-test results.

The test that was initially given as a pre-test was also given as a post-test. The post-test

data shows an increase in retention for both classes (see Figure 2). Why?

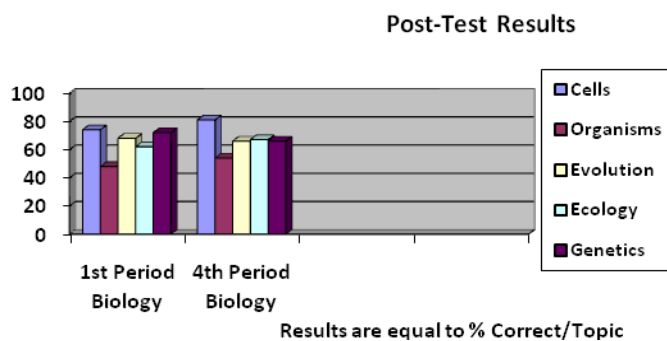|	1st Period Biology	4th Period Biology
Cells	74%	81%
Organisms	48%	54%
Evolution	68%	66%
Ecology	62%	67%
Genetics	72%	66%

Figure 2. Post-test results.

I also thought that it would be of interest to look at the percent change in knowledge acquisition between the pre-test and the post-test through comparison of the two classes (see Figure 3).

	1st Period Biology	4th Period Biology
Cells	+ 2%	+ 23%
Organisms	+ 5%	+ 10%
Evolution	+ 12%	+ 17%
Ecology	+ 14%	+ 21%
Genetics	+ 1%	+ 23%

Figure 3. Percent change in knowledge for the five subtopics.

Conclusions and Recommendations

Conclusions

The results are extremely interesting. It appears that, regardless of technique used to teach the students, the students increased their knowledge in both classrooms. It is important to note, however, that the 1st period students had a greater percentage of prior knowledge than the 4th period class. When I first looked at the results, and saw an increase in both classrooms, I thought that the rehearsal techniques employed were unsuccessful, by comparison. However, I decided to compare the percent change between the pre-test and post-test.

The 4h period class had a much higher percent change, which means that they learned and retained more information than did the 1st period class. The 1st period class was still taught material but, their extra practice included more labs and self-paced activities. The 4th period class spent an additional 30 minutes each day rehearsing what they had learned repeating essential vocabulary and concepts. It seems to have been beneficial; however, regardless of technique, both classrooms learned material from the first time it was presented to them.

Recommendations

It is in my opinion that rehearsal techniques do have a place in the educational system; however, I do believe that other techniques are successful, as well. As long as we test our students in a very formal, standardized way, there will always be a place for this type of extra practice using rehearsal activities. If I were to do this research again, I would try to get a bigger sample group to determine if the results are truly accurate. I would also be interested in looking at the high school graduation test that these same students will be taking their junior year. The material tested on the end of course test will also be tested on the high school graduation test. It would be interesting to note how well these same students do on that test, to determine which approach is better for long-term recall. In the days of accountability, I do not see standardized testing disappearing any time soon. With that some logic, I do not see the need for rehearsal activities disappearing any time soon, either.

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Let's Get Physical: Movement Breaks in the Classroom

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Education 590, Spring 2009

The University of Tennessee at Chattanooga

Introduction to the Problem

Every student, both high- and low-achieving, has a school subject in which they are most interested. Though they may highly like this subject, students still have problems focusing for the duration of the entire class. These students may need encouragement and help to boost their concentration. Though the children with attention disorders are thought to be the only ones with concentration problems, *all* students have difficulty concentrating and focusing for long periods of time.

In most modern high schools across America, students are expected to sit for nearly 5 hours every school day. Most classes last between 50 and 90 minutes, and, during this time, students must sit in their seats and focus on the lesson. With the rise of television and video games, students are becoming increasingly sedentary at home, as well. This increase of sedentary lifestyles may have an effect on students' academic performance.

How can teachers boost students' ability to pay more attention in class so that their academic performance might improve? My answer to this question is movement. Many times, I have sat through classes thinking only about how uncomfortable I was. A few minutes out of each class period allocated to movement could possibly help improve a student's concentration. Research has shown that vigorous physical activity helps produce student achievement, but I want to know how moderate movements throughout the classroom will affect student performance.

My action research project will consist of a plan to allow 5- to 10-minute breaks during each 90-minute class period to allow students to move about the classroom. I will monitor students' performance, attitudes, and relationships through a series of data collections, including candid observations. The purpose of this study is to determine if movement during class time has

an effect on overall student performance. The researcher wishes to note that, for the purpose of this study, the terms exercise, physical activity, and movement are interchangeable.

Limitations

While my expectations are that my research activities go perfectly well, I know there will be some factors that could influence the outcome of my findings. High school students are not perfect, and I am concerned that some may try to please me with their responses, instead of giving their honest answers. Some students may not take data collection seriously, which could affect outcomes. Many students are unmotivated, making it difficult to collect accurate measurements of students' personal achievement. Variables of students with severe concentration problems or other disabilities, could be difficult to measure, since their results may vary. The biggest concern I have for conducting this research is time. Time is already very limited in classrooms, and I am afraid taking time from the lesson could harm students more, in the long run. Any conflicts that arise will be noted.

Research Questions

- What outside factors in students' lives influence their performance at school?
- Will results show immediately? If not, will 3 weeks be an adequate amount of time to record accurate results?
- Will high-achieving students benefit enough to score even higher on tests?
- Will movement have an impact on other factors, such as interaction with other students or self-esteem?

Review of Literature

With physical education in decline throughout schools in the United States, an increasing amount of researchers have begun to take note on the relationship between physical performance

and academic performance. According to Tremarche, Robinson, and Graham (2007), Van Dalen and Bennett (1971) found:

> For in everything that men can do the body is useful, and in all uses of the body it is of great importance to be in as high a state of physical efficiency as possible. Why, even in the process of thinking, in which the use of the body seems to be reduced to a minimum, it is a matter of common knowledge that grave mistakes may often be traced to bad health ...But a sound and healthy body is a strong protection to a man. (Abstract section, p. 2)

There is a growing trend among researchers to believe that physical activity is no longer just for creating healthy bodies: it is also for creating healthy minds. Bartholomew, Ciccolo, and Morrison conducted a study in 2005, "designed to determine if a single bout of moderate-intensity aerobic exercise would improve mood and well-being in 40 (15 male, 25 female) individuals who were receiving treatment for major depressive disorder." Groups were randomly assigned, with one group participating in an exercise program and the other spending 30 minutes in quiet rest. At the end of the study, "the exercise group...reported a significant increase in positive well-being and vigor scores" (Abstract section, p. 1). According to Greenwood, Strong, Dorey, and Fleshner (2007), "not only can exercise help prevent the onset of depression or anxiety, but patients with stress-related mood disorders who engage in exercise alone...show clinical improvements similar to that seen with more traditional therapy" (p. 1).

Exercise is important for mental health because it stimulates the brain by increasing oxygen flow throughout the body and to the brain. According to Breithecker (2008), any type of movement benefits the kinetic sensory system, which allows the brain to function at a higher rate than when a body is sedentary (Dr. Dieter Breithecker, personal communication, January 18,

2008). Psychologists have even begun prescribing exercise as a way to counteract symptoms of behavioral and concentration disorders, such as AD/HD.

Exercise not only increases blood flow, but it can also create new stem cells in the brain (Lawrence, 1999, p. 5). According to VS America, Inc. (2004), "growing bodies have a natural need to move...Activities like fidgeting are actually healthy and vital for physical growth. What appears to be unnecessary movement in fact increases blood flow and oxygen to developing organs, muscles, and brains" (p. 7). Another benefit of exercise is its release of endorphins, which allow a person to feel "calm, happy, and euphoric" (Lawrence, p. 6). Physical activity affects one's "mood, vitality, alertness, and feelings of well-being" (Lawrence, 1). All of these lead to better performance in any activity performed. Taras (2005, Background on physical activity in the academic setting section, p. 1) stated:

> Physical activity improves general circulation, increases blood flow to the brain, and raises levels of norepinephrine and endorphins - all of which may reduce stress, improve mood, induce a calming effect after exercise, and perhaps as a result improve achievement.

A more sedentary lifestyle can also increase tension among relationships and may lead to at-risk behaviors. Field (2001) found that parental relationships (which includes "greater intimacy and more frequent touching"), depression, sports involvement, drug usage, and grade point averages were all affected by higher levels of exercise (p. 1).

Social relationships can be affected by exercise, which has proven to provide positive gains to interaction with others. Ullah and Wilson (2007) found that a positive relationship with teachers influenced academic achievement among a sample of university students. A child who openly communicates with his or her parents is more likely to do well in school, based on the

support and reinforcement provided by the family. Encouraging parents can lead to greater

motivation within a student. Relationships with peers lead to more positive outlooks on life and

higher self-esteem, which can lead to an increase in test scores. These relationships can also

provide support and encouragement for school performance and provide healthy competition on

school test grades. Taras (2005, Background on physical activity in the academic setting section,

p. 1) stated:

> Children who learn to cooperate, share, and abide by rules of group physical activities
>
> and those who learn to discover and test their physical abilities even in individual
>
> activities are likely to feel more connected to their school and community and want to
>
> challenge themselves. Physically active adolescents are less likely to attempt suicide,
>
> adopt risk-taking behaviors, and become pregnant - all of which may be associated with
>
> better academic outcomes.

"[R.J.] Shepherd has suggested that increased physical activity during the school day may

induce arousal and reduce boredom, which can lead to increased attention span and

concentration" (Coe, Pivarnik, Womack, Reeves, & Malina, 2006, Discussion section, p. 2). The

boost of self-esteem and the calming effect caused by the release of endorphins can lead to

adjustments in behavior. Children usually act out in classrooms to gain attention from their peers,

and higher self-esteem can decrease the need for attention. Exercise promotes concentration,

which means physically active children generally have higher attention spans. Breithecker (2005)

found that children who were allowed to move during class time had considerable increases in

concentration almost every time it was measured (Findings section, p. 12).

"Many recent studies leave no doubt that there are connections between motor activity

and cognition, an impact on learning by perception and movement and on children's learning and

performance" (Breithecker, 2005, Findings section, p. 13). A 2001 study conducted by the California Department of Education found that achievement scores increased in relation to levels of fitness (Burfoot, 2003, p. 2). The Department of Education "gave a standardized reading and mathematics test, as well as a 'Fitnessgram' test to 353,000 fifth-graders, 322,000 seventh-graders, and 279,000 ninth-graders" (p. 3). Scores in math increased more than those in reading; however, scores in both subjects showed a significant increase.

Exercise has been proven to have beneficial effects on the body and mind. A lack of exercise in the United States and around the world, coupled with a growing amount of overweight and obese students, has presented a problem among modern youth. Many students do not get the amount of exercise needed to maintain a healthy lifestyle, due to sedentary lifestyles at home and the expectation to sit throughout the school day. Breithecker concludes that children should be allowed to move throughout the classroom to promote learning. He designs furniture that encourages children to fidget, swivel, and roll, which he claims boosts children's concentration and enjoyment in the classroom (Dr. Dieter Breithecker, personal communication, January 18, 2008). Sedentary children are at risk for both health and cognitive issues, and both could affect school performance, as research has shown.

<div align="center">Data Collection and Results</div>

<div align="center">*Data Collection*</div>

The researcher relied mostly on qualitative data collection to assess students, but a few methods of quantitative collections were also performed. A behavioral chart was also kept, with different behaviors assigned different numbers. Throughout the project, observations were made to monitor academic achievement.

The researcher carefully monitored students during class time. Notes were taken, based on student behavior and performance. The researcher took notes and made observations on student behavior and performance during each lesson. Attitude and performance were noted, and compared with behavior prior to research being conducted. The researcher was careful to make sure that, at no point during the research, were students' learning and instruction time affected enough to severely impact student grades.

Interviews and conversations with the students were also conducted. The researcher asked the students questions about the project and conversed with them to candidly draw information pertaining to their attitudes, performances, and relationships. In addition, students were under evaluation throughout the course of the school day, not just during class time. The researcher monitored students as they walked through the halls and during activities, like lunch or study hall.

Methodology

This study was conducted with 10th-grade high school world history students as the participants. Two classes were selected to participate in the study, with a total of 10 students opting to have their their information recorded. Both classes occurred in the morning, before lunch. The researcher allowed the students a 5- to 10-minute break in the middle of class time (during 90-minute class periods), and allowed them to use the time period as they wished, as long as they were out of their seats. The students were encouraged to stretch and move about the room to try to boost their concentration and performance. Once the break was over, students were expected to sit at their desks and return to the lesson, whether the teacher was giving instruction or the students were working on an assignment. If the students became too rowdy during breaks, they were told they would have break-time taken away.

Both classes participated in pre- and post-data collection. The researcher held numerous discussions with the classes before research began to collect information on how the students felt about history class, and school, in general. Many times, the researcher spoke to students individually. By doing so, the researcher was able to avoid making generalizations about an entire class.

During the 3-week period of research, students were carefully monitored during class time. The researcher completed a behavioral analysis chart for each student. Each behavior was assigned a numerical value and was then recorded, based on each student. At the end of the class period, the students were given a total score, between one and five. A five was a perfect score, and a one was the lowest score. Then, at the end of the week, each student's scores were averaged to produce a weekly score.

The students in both classes were behaviorally and academically equal, when compared to each other.

<div align="center">Validity, Reliability, Generalization, and Ethical Issues</div>

Validity

The researcher went through every means necessary to make sure the data collected were valid. Students were measured qualitatively, as well as quantitatively. They were observed on multiple occasions, as well as interviewed various times in various settings. Also, the students were assured that their responses and results were not shared with anyone.

Reliability

Many times, students encounter various issues that affect their academic performance. Because of this, the researcher continuously collected data throughout the course of the project, in case a student encountered a problem that affected their performance. This helped prevent a

single issue from affecting results. The researcher provided students with a variety of evaluations in order to measure data accurately. Also, the researcher monitored students candidly, so that they could not adjust their behaviors to suit the project goals.

Generalizations

The researcher did not wish for all children to be viewed as inactive, with attention and concentration problems. Many children participate in a variety of extracurricular, physical activities. Some children may do well in school and have no problems sitting still throughout a class, or they may not do well and still have no problems sitting still. Also, the researcher did not intend for all students' academic problems to be blamed on lack of mobility during the school day. All children are different, and the methods of this project benefitted some students, while others showed no changes in progression. Each child was taken into account on an individual basis.

Ethics

Parents and students were assured that the curriculum and content of the course was not altered, and that the project did not take up classroom time to the extent of affecting the amount of information taught. Students were also informed that the research was an opportunity for them to stretch their legs during class, which had the possibility of being very beneficial to them.

Each student was viewed as an individual, with individual feelings, attitudes, and accomplishments, and the researcher was careful to not predetermine anyone's results, based on previously known information or previous observations of the individual. The researcher collected and assessed each student's evaluations in the same manner, so that all students were treated equally. Each student was provided the option of not participating in data collection, but all students were allowed to participate in the breaks taken during the lessons.

Resources

- Time for collaboration with teachers and students, data collections, and observations.

- Classroom time to conduct exercise breaks.

- Copy paper for information distribution and questionnaires.

- Questionnaires.

- Computer access with word processing and spreadsheet software.

- Paper to record observations.

<div align="center">Results</div>

The researcher is, on the whole, very pleased with the results of this study. The students seemed to respond very well to the breaks implemented during class time. For the most part, students responded very favorably to being allowed the opportunity to get out of their seats in the middle of a lesson.

The researcher also used a behavioral observation chart (see Figure 1 and Appendix A) to keep track of students' behavior during the study. The chart was designed for the researcher to assign each student a number, based on their behavior for the day. The scores were between one and five, with a score of five being a perfect score. The better behaved students were, the higher the score that was given to them. At the end of each week, the scores were averaged, and the student received one, overall score for the week. Figure 1 displays these scores by week, for each of the 10 students that participated in this study. Some of the students averaged perfect fives for their weekly scores. The students were very well-behaved during classes with breaks. For the behavior category, the researcher included participation, concentration, completion of work, and overall behavior. All of these sub-categories were summarized into one, and the students were given only one score per day.

Note that the average weekly behavioral score did not drop below a 3.5. A value of 3 would have been an average score. For the most part, student behavior improved as the weeks progressed. By the end of week three, students were actually behaving and performing better than they had during week one of the study.

Based on observations, the researcher feels comfortable to say that implementing breaks during class time was an effective means to boost student behavior and performance. Before breaks were implemented, the researcher noted that many of the students lost interest in lessons and participated less as the class progressed. Once breaks were implemented, student performance stayed steady throughout class time. Students seemed to stay more focused, and participated more in discussions and group work. Concentration seemed to be the same towards the end of class as it was during the beginning of class. The students did not rustle papers as much, fidget, or stretch to see the clock. The bell, indicating the end of class, seemed to come as a surprise to many, whereas before research, students would watch the clock more than they would watch the teacher.

Overall, students seemed happier with break time being implemented in the classroom. Breaks were given at the teacher's convenience, usually during the middle of the class. If, for some reason, the teacher forgot, the students were sure to remind her. They enjoyed, and looked forward to, getting out of their seats. Those who came into class tired usually seemed awake by the time they had gotten up to move around. Students carried on conversations with each other, and seemed more social, and, overall, they seemed to enjoy class much more. They were more compliant with teacher requests and did not seem as annoyed with classroom activities. Most students completed their assignments without complaint and with enthusiasm. Many times, the students vocally expressed that they liked history better when they didn't have to sit for the entire

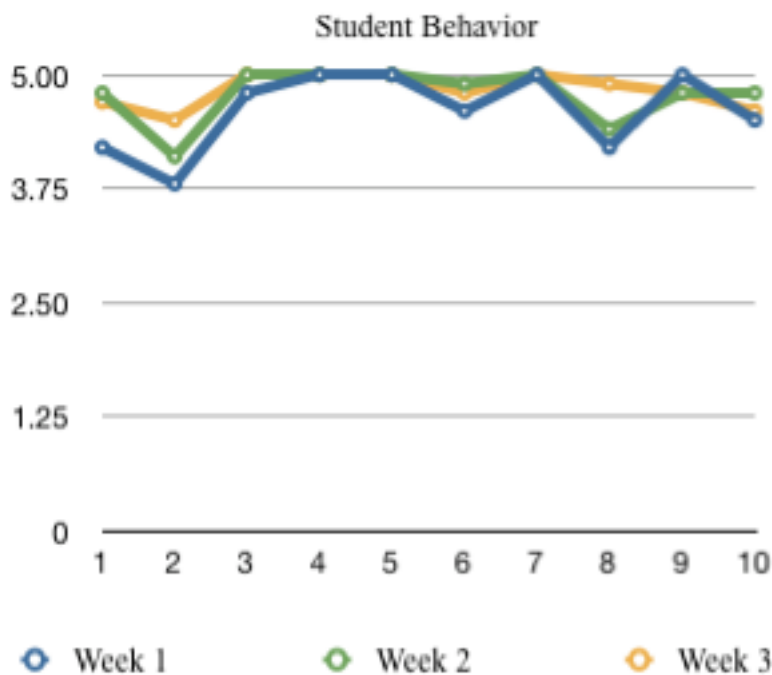class period. When the researcher asked the students if they liked taking breaks, they unanimously answered, "Yes."

Figure 1. Average weekly behavioral score.

Conclusions and Recommendations

Conclusions

It is the researcher's opinion that implementing breaks in the classroom would benefit all students. Based on this study, the students were much happier in class and got bored less easily. The researcher found that breaks, when given for an appropriate amount of time, helped the class as a whole. No harmful issues were found that could come from this study. The students and teacher got along better, and the classroom became a more positive environment. The breaks were also extremely welcomed by the teacher. The teacher had an opportunity to pause lectures or assistance with class work, and rest behind the desk, while the students moved around. Both the teacher and students responded favorably to interrupting lessons. Overall, the classroom

seemed a much more cooperative place to learn, as the students were happier throughout the class period.

Recommendations

For teachers that lead the class the entire period, a break could help students focus more on the teacher-led instruction. For those who assign activities and student-led instruction, breaks could still help students focus more on their work and less on their lack of comfort. Classroom breaks can even be used as incentives for good behavior. The researcher found that students were excited about break time. A teacher can allow their class to earn break-time or take it away for inappropriate behavior. It is recommended, by the researcher, that breaks be used during instruction time, to benefit both the students and teacher with regard to classroom behavior and academic performance. The researcher does recommend setting an egg timer or other kind of alarm to remind the teacher that break time has ended.

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Appendix A

Behavioral Observational Chart

Date: _____

Student ID	Attention	Participation	Interaction	Assignment Completion	Total Score
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

What Teaching Strategies Positively Impact Student Learning

in a Large Classroom Setting?

Amy Suits Land

Education 590, Spring 2009

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA00004149) has approved this research project # 09-046.

Introduction to the Problem

Class size has been a controversial topic in education since the early 1920s. Experiments and surveys have been conducted to try to determine the effects, if any, that small classes have on student performance. Many studies suggest students from small classroom settings perform higher academically, and are ahead in learning concepts, than students from a large setting. A small classroom has been defined as one with 15 to 17 students and one certified teacher. A large classroom has been defined as one with 18 or more students and one certified teacher.

The reality is that, most teachers, especially in a public school system, will be given what has been defined as a large class. The majority of schools and school systems are faced with budget and other financial issues that force the rooms to be filled with more than 18 students. If students perform better in a small class setting, it is important to determine some ways to assist the students in a large classroom.

I have been teaching for 2 years at a rural high school in southeastern Tennessee, and all of my math classes have contained more than 18 students. The purpose of my study is to determine techniques and ways to captivate most, if not all, of the students in my classroom, and improve their mathematic skills.

Review of Literature

Teachers, administrators, and others have been working for years to determine if a small classroom has any impact or effects on a student's academic performance. Throughout the years, after different studies, conflicting results have been discovered. The American Federation of Teachers asserts that, "taken together, the studies provide compelling evidence that by reducing class size, particularly for younger children, will have a positive effect on student achievement"

(Murphy & Rosenberg, 1998). The Heritage Foundation claims, "there is no evidence that smaller class sizes alone lead to higher student achievement" (Rees & Johnson, 2000).

According to an article written by Biddle and Berliner (2002), it was determined, based on field experiences conducted, throughout the 1960s, there was little to no difference in students from small and large classrooms. By the 1970s, a method of research called meta-analysis was introduced. This concept facilitated the statistical results from similar studies and estimated effects for the entire study's population. This method was applied to the results of earlier studies, and a new conclusion emerged. The reviewers claimed that even short term exposure to small classes produced gains in student achievement. It was also stated that the gains are greater when exposed to the small class setting, in a classroom with fewer than 18 students and one teacher, in the early grades. The gains also showed to be greater for groups that are traditionally lower in education.

Hanushek, an economist, began to review studies and surveys from earlier years in the 1980s. Hanushek concluded the public schools were ineffective, and felt they should be replaced by competing private schools. Other reviewers of the material felt inappropriate samples were used in the studies Hanushek was studying. Most of the studies did not examine class size directly, but looked at student-teacher ratios. The number of students divided by the number of teachers provides the student-teacher ratio. This approach considered people in administration, nurses, counselors, coaches, specialty teachers, and other professionals who are rarely in the classroom as "teachers." Therefore, the ratio was not accurate.

Research shows that other surveys that have been conducted and have investigated class size directly (Ferguson & Ladd, 1996). These studies conclude that long-term exposure to small classes in the early grades can be associated with higher student achievement. The same gains

may not be received if the exposure is not provided until the middle or high school levels. The study claims the student performs at a much higher level academically if placed in a small class at an early age.

In the mid-1980s, the Tennessee legislature funded a 4-year study to compare the achievement of early grade students assigned randomly to one of three conditions:

1.   Standard classes: classes with one certified teacher and more than 20 students.

2.   Supplemented classes: classes with one teacher and a full-time, noncertified teacher's aide.

3.   Small classes: classes with one teacher and about 15 students.

This study is Tennessee's Project STAR (Student/Teacher Achievement Ratio), and is said to be the largest and best designed field experiment ever undertaken in education (Finn & Achilles, 1990). The study focused the first year on 79 schools and about 6,300 students. At the beginning of each school year, the sample population changed, somewhat. Some participating students moved away and others entered into the classrooms. The changes were minor to some people, and it has been determined the changes did not affect the results in the study.

At the end of each school year, STAR students took the Stanford Achievement Test, and received separate scores for reading, work-study skills, and mathematics. The results from these tests were similar for the supplemented classes and the standard classes. However, the results from the smaller classes were sharply different. The long-term exposure to the small classes generated substantially higher levels of achievement, and the gains became greater the longer the students were in the small classes.

The Tennessee legislature authorized additional funding to study the students throughout the remaining school years. The study would test the students at the end of each year to

determine if the students from the small classes continued to out-perform the students from the large classrooms. The results showed the students who had attended the small classes were months ahead of students who had not been exposed to the small class setting. The study determined additional positive findings for these students. Fewer students dropped out or had to repeat a year. They earned better grades, on average. More students from the small class setting opted to learn foreign languages. More students took the ACT and SAT college entrance examinations. Overall, the students from the small class settings performed at a higher level than those of a large class setting.

Additional studies have been performed similar to the STAR project. Wisconsin's Student Achievement Guarantee in Education (SAGE) program (Molnar, 1999; Zahorik, 1999) was a much larger field study. This study, led by Molnar, focused on the needs of disadvantaged students. The findings are somewhat similar to those found in Tennessee. The test scores are higher, and the students appear to be more eager to learn when in, or if they have been in, a small class setting. Many types of students gain from the small classes in the early grades, but the gains are greater for students who have traditionally been disadvantaged in education. My question is, "Why?" What is making these students excel in education?

Several theories exist that attempt to explain why these students are outperforming others. In the early grades, students first learn the rules of a standard classroom, and begin to form ideas about school and/or education. Students are beginning to see how to cope with other students, teachers, and education. Many students have difficulty with these tasks, and interactions with a teacher, one-on-one, help the student to overcome their dilemmas. The one-on-one interaction is more likely to occur in the small class setting. Learning how to cope well in school is crucial to success in education, and the students that achieve this objective in the early

years tend to have advantages throughout their years of education. Wasley found that the teachers in the small classes tend to have higher morale since they do not have as many discipline problems to deal with. The better attitude enables the teachers to be more supportive of their young students.

The small classroom environment is somewhat different from that of a large classroom. Discipline and classroom management problems do not interfere with material instruction. These problems rarely exist in a small classroom, and the students are more likely to remain focused on learning. Also, the teacher stress is much lower in a small class setting. This allows the teacher to want to be more supportive of the students. Less time is spent on management, and more time is spent on instruction, in the small classes. Students tend to participate in class, and have positive relationships with the teachers and other students. The students feel secure, and have a higher level of self-confidence, when placed in the small classes. They are each made to feel important due to the greater amount of attention that is provided to them. This higher level of self-efficacy plays an important role in motivating students.

It is somewhat easy for students to "get lost" in large classes and large schools. The teacher's time is limited, and they find it difficult to spend one-on-one time with 25 to 30 students in a class. This fact raises concern to the question: Are the students being held accountable for what they are being asked to do in the classroom? If a student in a large class falls behind, or begins to feel discouraged with the learning, it may be a few days to a week, or even longer, before the teacher actually realizes what is happening. What can be done to make the teacher more interactive with the students in a large classroom? How can the teacher better understand the students he/she has, and the level of understanding the students have? Teachers

from large classrooms have been interviewed, and they each share a common feeling that they do the best they can with the environment they have, and reach as many students as they can.

Although students in the small classroom settings seem to be outperforming students from a large classroom setting, I feel there are areas in the large classroom that can be modified to assist the students with his/her learning capacity. Different teaching techniques and class management styles may have a positive impact on academics for the students placed in the large classes. My study is designed to determine if different teaching strategies and techniques positively impact a student's learning in the large classroom setting.

Data Collection and Results

Data Collection

Subjects

The subjects for this study consisted of 24 students in the first Geometry class, Class A, and 27 students in the second Geometry class, Class B. All participants were juniors and seniors at a public high school. All students in each class participated in the study.

Instruments

The Student-Teacher Contract for Class A is contained in Appendix A. The pre-test assessment, quiz, and written test were from the textbook publisher's materials.

Methodology

Based on the number of students in each class, both are considered large, as opposed to small. I conducted the study to determine what different teaching strategies and styles had a greater influence on the students' knowledge and academic achievement.

The content began with material which covered slope and equations of a line, and moved into topics pertaining to triangles. I administered a pre-test on the first day of my study to

determine the students' knowledge of theses topics. The results of the pre-test allowed me to see that the students in the Classes, both A and B, did not seem to have an understanding of the material. I conducted numerous activities and provided instruction, using the textbook, in hopes to engage the students in both classes, and had them perform hands-on activities to assist them with learning the new material. Class A was asked to sign a Student-Teacher contract. The student's signature on the contract committed him/her to performing to the best of his/her ability during the study. Students in Class B were not asked to sign the contract. The purpose of the contract was to see if the students felt more obligated to me, as the teacher, to work harder in the class. There was no accurate way to determine if the students actually performed to the best of his/her ability, but my goal was to see if they appeared to be more committed to the requirements of the class.

I conducted a daily review with Class A. I did not conduct the daily review with Class B. My goal was to determine if the review might be beneficial to the overall understanding of the material for the students in the large classroom setting. Class A performed the hands-on activities, and worked problems adopted from the textbook, in groups, allowing students to receive assistance from peers. Class B performed the activities and worked problems as individuals. The students in Class B were not allowed to receive help or assistance from peers until after the answers were discussed. I tried a number of different strategies with Class A in an attempt to reach more students and reach each person on a deeper level.

Results

I began the study with no knowledge of the students' readiness in either class. I administered a pre-test to both classes on the first day of the study. The students from Class A and Class B did not do well on the pre-test. The mean score on the pre-test for Class A was 17.81

out of a possible 100 points. The mean score on the pre-test for Class B was 17.72 out of a
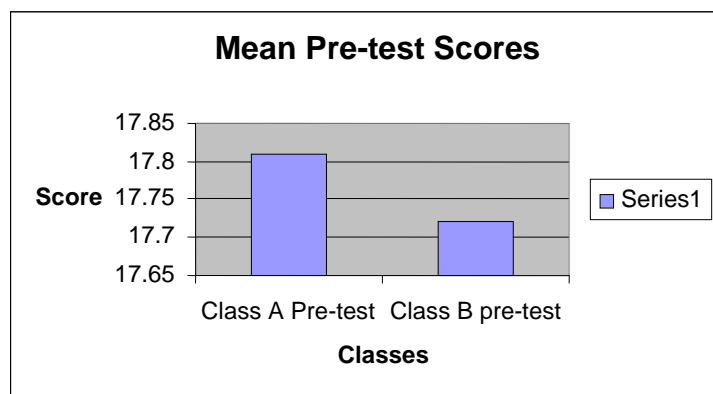
possible 100 points (see Figure 1).

Figure1. Mean pre-test scores for Classes A and B.

The scores on the pre-test indicated that both classes were at a low level of understanding

with the material I was beginning to cover. After a few lessons were delivered, I gave the classes

a quiz. The mean score on the quiz for Class A was 91.6, and the mean score on the quiz for

Class B was 83.61. The difference in the quiz score between the two classes was 7.99 points. I

administered a final test at the end of the study. The test came after all the topics had been

covered, and the students had opportunities to practice the skills to which they were introduced.

The mean test score on the final test for Class A was 98.3, and the mean test score for Class B
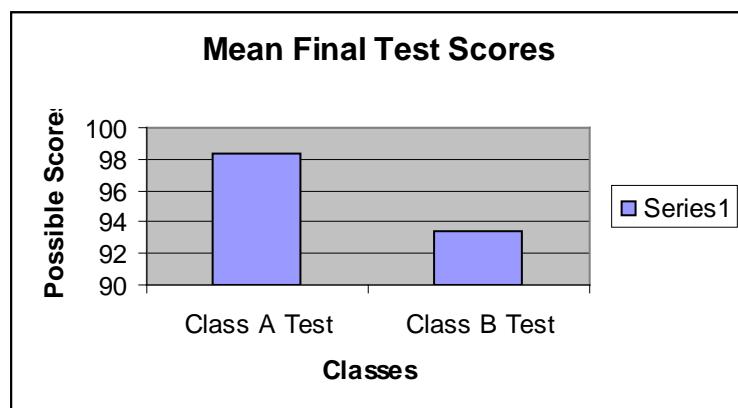
was 93.32 (see Figure 2).

Figure 2. Mean final test scores for Classes A and B.

The two classes performed almost equally. Both classes had an average score which is classified as an A in the grading system. The point difference in the two classes on the mean final test score was 4.98 points. The students in both classes worked hard and gained a better understanding of the overall material by the time the final test was administered. I was surprised there was not more of a difference in the quiz and final test scores between the two classes. Both classes were considered large, and I faced the normal challenges of a class with more than 18 students. Class A still out performed Class B, but I expected the variation in the test scores to be greater.

Conclusions and Recommendations

Conclusions

Based on the results of this study, I would have to assume the teaching strategies I used with Class A had a positive effect on the students. The different styles and techniques I used with Class A included daily review of previous material, and peer tutoring work, as opposed to individual work. I feel the daily review was a way to reiterate the material previously learned on a daily basis. The students seemed to remember terminology and basic concepts related to the material by reviewing it each day. I also feel utilizing peer tutoring and peer assistance in Class A was beneficial. Students appeared to feel more comfortable seeking help from friends and classmates when questions arose. Class B was not allowed to seek help from peers and was asked to work individually. I noticed the students in Class B did not ask as many questions in class as did the students in Class A. I feel the students in Class A enjoyed a more comfortable and welcoming learning environment. I, personally, feel the peer tutoring and group interaction played a part in making the students feel comfortable.

There was a substantial difference in the mean quiz scores for both classes. The quiz was delivered in the middle of the case study. Class A's scores were higher than Class B's scores. I feel the daily review contributed to the higher scores for Class A. The students in Class B were not as familiar with the terms and concepts as I went through the study as were the students in Class A. Class B students did appear to make the strongest gain from the quiz grade to the final test score. I did not include a review or group activities, but the students did perform well on the final test.

It is safe to conclude students in a large classroom setting can learn and perform well academically. There are certainly challenges for both the teacher and students in a large setting, but the students can still make progress in learning, retention, and other academic areas. I feel that trying different teaching strategies and styles will be beneficial and have a positive impact on the student learning. Each class will be different, as the students will be different, so teachers need to take this fact into consideration when trying new styles and strategies. What works with one class may not work with another. The goal is to find a way to reach as many students, as possible, in a large class, and work with each student as he/she progresses academically.

Recommendations

The faculty members at the high school are well aware of the problem of reaching students in a large class. I have found it beneficial to have the support from the administrative staff at the school. Most of the classes contain more than 18 students, so there are many teachers working to overcome the challenges of the large classes. It has been helpful to meet with my peers and have discussions about ways to reach more students. I recommend that teachers collaborate to share different ideas and styles which have proven to be effective with large

classrooms. Teachers can learn a vast amount of information from other teachers, and time needs to be set aside for discussions to take place within schools.

Inservice opportunities are available for teachers to take courses or attend seminars pertaining to class management skills. One of the main differences the studies showed in previous years was less time was spent dealing with class management issues in the small classroom environment. Grant money is available to have a group or an individual come into a school to speak on this topic. I suggest teachers work with the administrators of the school to have seminars available for teachers pertaining to class management skills, teaching styles and techniques, and increasing graduation rates. It is important to be proactive with these issues, rather reactive.

One way to utilize technology in the classroom is to obtain some computer-based tests which are available for most classes. These computer-based tests may decrease the amount of time normally needed to grade papers. Teachers would then have more time to concentrate on teaching and working with the students. Teachers may not be able to escape having more than 18 students in a class, but they can be aware of opportunities to be a more effective teacher.

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Appendix A

Student-Teacher Contract

As the **student**, I pledge that I will:

1. Comply with the rules set forth in the [school's] Student Handbook
2. Come to class on time and be prepared to work
3. Complete all assignments to the best of my ability
4. Work independently unless told otherwise from my teacher
5. Show respect to my fellow classmates and to my teacher
6. Not be disruptive in class or cause others to have difficulty learning
6. Seek help when it is needed

_____   _____

Student name   Date

As the **teacher**, I pledge that I will:

1. Provide a safe and positive atmosphere for learning
2. Provide instruction in a way that will motivate and encourage students
3. Explain assignments to ensure students have a clear understanding
4. Encourage questions and participation
5. Give support unconditionally

_____   _____

Amy Land   Date

Correlations Between Student Interest and Student Performance
Raymond T. Lee
EDUC 590, Spring 2009
The University of Tennessee at Chattanooga

Introduction to the Problem

Many students rank history at the top of their list of the most "boring" classes in school. As a result, and as with many other school subjects, emphasis continues to focus on motivating students to learn. One key element in this motivation is interest. Class lessons are created with a focus on helping students become more interested in the subject matter being covered. Supporters of progressive education methods argue that creating lessons that are more interesting to students, usually lessons that are more student-centric in nature, are the key to equipping students with basic knowledge and motivation for future continual learning. Basic knowledge and continual learning, they argue, are necessary to maximize student potential throughout their lives.

Opponents of progressive, student-centric learning argue that student interest should not necessarily be the paramount concern of educators. They argue that the time spent creating and executing "interesting" lessons may come at the expense of other core curriculum that may not be covered adequately. The Core Knowledge Foundation is such an opponent, in some respects. The Core Knowledge Foundation argues that students need a "solid, specific, shared core curriculum in order to help children establish a strong foundation of knowledge, grade by grade" (About Core Knowledge, 2008, Introduction section, last paragraph). The Core Knowledge Foundation cautions against exerting too much energy trying to create interesting lessons because that time spent could be at the expense of other subject matter. Instead, students deserve a solid, sequenced, specific, shared curriculum. It is claimed that this curriculum, they claim, is timeless and basic, and should not change (About Core Knowledge, 2008). This type of curriculum is the type that may suffer if too much time is spent simply trying to satisfy interest.

Most would agree that increasing student interest in subject matter is a positive development. Most would also agree that equipping students with as much basic core knowledge, as possible, is a positive thing. This research seeks to investigate any correlation that may or may not exist between student interest and overall student performance.

Area of Focus Statement

The purpose of this study is to describe the effects of student interest of history content on overall student performance. Presently, the subject of history on a high school level is often taught through teaching methods that rely heavily on lecture, although some educators spend considerable time trying to increase student interest through student-centric teaching methods. Many students continue to think of history as a boring subject. This study will seek to manipulate variables to create different levels of interest among students, and performance among students will be evaluated to determine if increased interest leads to increased student performance.

Limitations

The first limitation regarding this study has to do with the researcher. The researcher will also be the teacher, for a temporary time. Students may become more or less interested in the subject matter being covered at the beginning of the research period, simply because they are participating in something new. They will have a different teacher. This fact, alone, may skew the final results.

Secondly, students will be aware that they are part of a study. As with any study where subjects are aware that they are being studied, students may not perform as they normally would. Accurately quantifying interest among students may prove especially challenging, considering students are aware that they are part of a study.

Thirdly, measuring different teaching methods by using different sets of students may cause inaccurate results. The most accurate method might consist of teaching all sets of students, rotating different teaching methods. Due to time constraints, this will not be possible. Different sets of students will be taught using different teaching methods. As such, the final results may be skewed.

Research Questions

- How is student interest, with regard to history content, affected by a traditional, teacher-centered lecture format of instruction, versus progressive, student-centered teaching formats?

- How is student performance, with regard to history content, affected by a traditional, teacher-centered lecture format of instruction, versus progressive, student-centered teaching formats?

- What is the connection, if any, between student interest and student performance, with relation to history content?

Review of Literature

Much research has been conducted pertaining to the relationship between student interest and performance in education. These studies have looked at a range of aspects of student interest and performance. Some studies, such as Shen, Chen, and Guan (2007), have sought to look directly at the correlation between student interest and performance. However, other studies, such as Beers (2005), have sought to indirectly gauge student interest by examining student performance that is the result of various different teaching pedagogies. Beers compared objective test scores of students that were taught using Problem-Based Learning versus those of students

taught using traditional lecture. Ultimately, every study examined has addressed some aspect of the correlation between student interest and performance.

Interest

Ainley (2006) explains that research is "an affective state that represents students' subjective experience of learning; the situation that arises from situational triggers or well developed individual interest" (p. 391). Ainley's study focused on student attitudes toward certain tasks as they were being conducted. These tasks were simulated to represent everyday classroom activities. Ainley explains that there are two different types of interest that can be measured. Situational interest "can be triggered through attention to the way learning is presented" (p. 401). Individual interest, according to Ainley, is when a student has a pre-disposition to engage based solely on the content before him/her. Understanding situational interest is critical to understanding this study's focus on various teaching styles as a way to indirectly gauge student interest.

Interest versus. Performance

Many studies have concentrated on the correlation between student interest and performance in the classroom. Research conducted by Shen et al. (2007) examined whether or not interest could be used as a predictor of student learning in physical education classes. This study examined 202, sixth graders in the Baltimore and Washington area as they covered a softball unit for their physical education class. The researchers measured both individual and situational interest in their study. They found a correlation between individual interest and knowledge gained by the student. Situational interest did not seem to have the same affect. While situational interest helped students while they were involved in the activity, researchers found little evidence that this interest contributed to real knowledge gain (Shen et al., 2007). Likewise,

research conducted by Boscolo and Mason (2003) also found student interest to be a factor in student performance. Boscolo and Mason, however, examined topic knowledge along with interest to draw conclusions related to student performance.

Like Shen et al. (2007), Boscolo and Mason (2003) also found a correlation between student interest and student performance. Boscolo and Mason, however, looked at more than just student interest. They conducted a study that examined 303, high school students as they studied modern languages, as well as Greek and Latin. They chose participants that displayed varied interest and that had varying levels of knowledge regarding the subjects. They concluded that topic interest and topic knowledge seemed to play dual roles in contributing to student performance. When topic interest was low and topic knowledge was high, students seemed to perform well. Conversely, when topic knowledge was low and topic interest was high, students also seemed to perform well; when both were low, students did not perform well, and when both were high, students performed best. They concluded that student interest and student topic knowledge are both driven, at least, in part, by one another (Boscolo & Mason, 2003). Just as Boscolo and Mason found that student interest can be driven by topic knowledge, Tavani and Losh (2003) found that student motivation can also be driven by topic knowledge.

Tavani and Losh (2003) conducted a study of students who took part in a summer orientation session at a large university. They examined survey data from the Cooperative Institutional Research Program (CIRP). Academic performance, expectations, motivation, self-confidence, and parental education level were measured. This study found a significant correlation between students' high school academic performance and their motivation with regard to future performance. The findings pertaining to motivation, along with the findings from Boscolo and Mason (2003) with regard to interest, seem to go hand in hand. Student interest and

motivation, with regard to future areas of study, can be directly linked to self-perceived topic knowledge abilities. These two studies demonstrate the close correlation between interest and motivation.

Variety in Pedagogy

As has already been stated, situational interest "can be triggered through attention to the way learning is presented" (Ainley, 2006, p. 401). Given this conclusion, the remaining portion of this literature review seeks to focus on a variety of pedagogies, and how they affect student performance.

House (2007) examined the relationships between computer use, instructional strategies, and interest in reading for students. The study analyzed a student questionnaire submitted by students who participated in the Progress in International Reading Literacy Study (PIRLS). The study focused on three types of instructional activities, which were "computer use, reading instruction in school, and strategies used after reading something in class" (p. 92). House found that students who used a computer to research information were more likely to express enjoyment for reading. Furthermore, students who were able to talk to others about what they had read were also more likely to express enjoyment for reading. House concludes that students who use computers for certain activities express increased enjoyment and interest in reading.

House's (2007) findings of an increase in enjoyment and interest in reading can be highlighted when examining what is behind the success of some computer-based, reading instruction programs. Furthermore, these findings support the overall theme in this section that variety in pedagogy can lead to an increase in student interest, which can, in turn, lead to better student performance.

It should be noted, however, that improvement may not come simply from increased student interest. A study by Keaton, Palmer, Nicholas, and Lake (2007) found that direct instruction, combined with playful extensions for elementary students, seemed to maximize student learning in reading and writing. The researchers conducted their study by examining 15 to 20 students during the spring and fall terms of a school year. During the fall term, students were given significant amounts of time to participate in a variety of literacy activities. During the spring term, students were given direct instruction with playful extensions. The researchers saw knowledge growth, across the board, in the spring, after using this method. Though the researchers could not conclude with certainty that this method was what caused the knowledge growth, they emphasized the direct correlation that they observed (Keaton et al., 2007). This method appears to be one that increases the student's situational interest through playful extensions, while still maintaining core content coverage through direct instruction.

Cooperative learning is another type of pedagogy that may increase student interest in learning. Yamarik (2007) conducted a study pertaining to cooperative learning and student learning outcomes. Yamarik described cooperative learning as "a teaching method where students work in small groups and help one another learning academic material". Cooperative learning allows the teacher to remain as the subject matter expert. Students turn to one another, rather than the teacher, to seek answers to questions. This study was conducted using multiple sections of an intermediate microeconomics class. In two sections, a traditional lecture format for instruction was used. In the remaining two sections, cooperative learning was used. The results of this study indicate that students who were enrolled in the class sections that used cooperative learning performed better on post-tests. The study's findings are inconclusive, with regard to the reasons for the improvement (Yamarik, 2007).

While other studies, such as Boscolo and Mason (2003), have found a correlation between increased student interest and performance, Yamarik (2007) found no such correlation. He notes that student interest appeared unchanged while performance improved. While the findings of the study are unable to attribute an improvement in student performance to an increase in student interest, they do not contradict other studies that have shown that an increase in interest can lead to an increase in performance (Yamarik, 2007).

As with the Yamarik (2007) study, Dickie (2006) conducted a study that also found a statistically significant improvement in student performance. Unlike Yamarik's study, Dickie's study does find an increase in interest among students who participated in the study. The study that Dickie conducted examined subjects from three sections of a microeconomics class. The study focused on whether or not experiments in the classroom led to increased learning. Two of the sections that participated in the study were taught using the experimental procedure. The remaining section was taught using the lecture format. The conclusions of the study were similar to Yamarik's (2007) study, in that improvements in student learning were observed in the experimental sections. The conclusions were different, however, with regard to interest. While Yamarik found no change in student interest, Dickie found an increase in student interest in the experimental sections.

A similar study, conducted by Emerson and Taylor (2004), compared student performance across experimental and lecture-oriented sections of a microeconomics course. Emerson and Taylor conducted this study over nine sections of a microeconomics course. Two sections of the course strongly emphasized experimental procedures, while the remaining seven sections did not. Some data, such as that from tests designed by the instructors who taught the sections, did not show a notable difference in student achievement. The most notable exception,

however, was the improvement, with regard to the Test of Understanding in College Economics (TUCE), shown by the students who took the experimental sections of the course. Students in the experimental sections scored 2.42 to 2.99 questions higher than students not enrolled in the experimental sections (Emerson & Taylor, 2004).

Emerson and Taylor (2004) did not address interest in this study. The results of the study do not indicate whether or not there was an increase in student interest in the experimental sections that might have led to higher TUCE scores. Similarities exist between this study and the studies conducted by Yamarik (2007) and Dickie (2006). Unfortunately, both of those studies yield different results, with regard to student interest. Yamarik found no change in student interest, while Dickie did find a change in student interest. Given these conflicting examples, assumptions cannot be made, regarding student interest in the Emerson and Taylor study.

Not all data reviewed for this study supports the hypothesis that an increase in interest translates into an increase in student performance. A study conducted by Beers (2005) does not follow the pattern of all other literature reviewed, with regard to an increase in student performance whenever a more progressive, nonlecture-oriented teaching method was used. This study examined student perception and objective test scores of students enrolled in adult health nursing courses in the fall of 2001 and spring of 2002. Students enrolled in the fall course were taught using a traditional lecture method. Students enrolled in the spring course were taught using a problem-based learning (PBL) method. The study's data indicated that, although students who received PBL-type instruction seemed to show more interest in the subject matter than students who received traditional lecture type instruction, no statistically significant difference was found, with regard to their objective scores. This study would seem to call into question the assumption that an increase in student interest translates into an increase in student performance.

The literature reviewed for this study defines interest, examines correlations between student interest and student performance, and examines different correlations that may or may not exist between student interest and student performance, across various teaching pedagogies. The literature examined showed many positive correlations between student interest and student performance. Not all literature, however, credited increased student performance with an increase in student interest. Lastly, one study reviewed seemed to contradict the notion that an increase in student interest results in an increase in student performance.

Data Collection and Results

Data Collection

This study will take place at a suburban middle school in Hixson, Tennessee. The daily schedule of the school will consist of class times that range between 55 and 65 minutes. The study will take place in four seventh-grade, social studies classrooms. There will be approximately 90 students involved in the study. The demographics of the students will vary, but the researcher will take care to make sure all classes are relatively homogeneous before continuing with this study.

The study will take place for the entire class period for the four classes being studied. The researcher will use both qualitative and quantitative research methods to assess the students' interest and performance, with regard to social studies content. Various data collection methods will attempt to measure any correlation between student interest and student performance in the subject matter content. Data collected during this study will be kept confidential and will not be counted toward overall student performance in the class.

Group one, consisting of the first and second-period classes, will be taught using a traditional, teacher-centered lecture format. Group two, consisting of the third and fourth period

classes, will be taught using more progressive, student-centered formats for instruction. Such student-centered formats may include group work, debate, computer related work, etc. The researcher will attempt to manipulate student interest through various forms of instruction. The researcher will attempt to measure whether or not a change in student interest translates to a change in student performance.

The intervention for this study will last for approximately 4 weeks. Care must be given to this study's design, intervention, and analysis of the findings. Finalizing the study's design, implementing the study's intervention, and analyzing the study's findings will take approximately 4 months.

Methodology

This study will incorporate both qualitative and quantitative research methods. The first form of qualitative research will be a pre-intervention survey that will be used at the beginning of the intervention. The survey will be used in both groups being studied, and will question students in an attempt to gain knowledge about the students' interest levels, with regard to certain social studies content and certain methods of class instruction. The survey will ask students to rank their interest in various Middle East content areas, on a scale of one to five. The researcher will add all numbers together and divide by the number of questions asked. This will give each student a score from one to five. A score of one indicates little interest in Middle East content while a score of five indicates much interest. This survey will later be compared to a post-intervention survey to gauge any change in student interest, with regard to social studies content. The researcher will also ask various questions related to different types of teaching strategies on this survey, although these findings will not necessarily be used to gauge student interest in social studies content.

The second data collection method will be qualitative and will be directly compared to the first collection method mentioned. The researcher will use a post-intervention survey in the two groups being studied. The researcher will compare scores on the pre-and post-intervention surveys to capture any change in student interest with regards to social studies content covered during this study.

The third data collection method will also be qualitative in nature. The researcher will observe individuals and groups for indications of varying levels of student interest. Researcher observations may detect specific elements of student interest and performance that surveys and tests may not. The researcher may be able to detect, through observation, whether or not certain teaching methods are causing boredom among students. Furthermore, the researcher may be able to detect, through observation, whether or not students understand material covered, and this student understanding may not be accurately reflected in tests.

One quantitative data collection method used in this study will be a pre-intervention test. This test will measure the academic knowledge of students, in both groups, with regard to the social studies content that will be covered during the main intervention. Questions will be multiple choice, matching, and map labeling, in nature.

The second quantitative data collection method used in this study will be a post-intervention test. The pre-intervention test will also be used as the post-intervention test. Results of this test, for both groups, will be measured in an attempt to gauge how close together the groups are, in terms of academic knowledge of the social studies content in question. The researcher will analyze results of the pre-and post-intervention tests to determine which groups (teacher-centered instruction versus student-centered instruction) gained more academic knowledge, as measured by the test.

Lastly, the researcher will compare changes in pre- and post-intervention surveys to changes in pre- and post-intervention tests. The researcher will look for any correlations. For example, the data might indicate that the group that showed the largest increase in student content knowledge between the pre- and post-intervention tests may also show the largest increase in student interest between the pre- and post-intervention surveys.

Recruitment and Selection Plan

All members of this project will have to participate fully and honestly, in order for this study to show accurate results. Members of this study will include the researcher, students, parents, lead teacher, and principal.

The researcher for this study is also the teacher who will be conducting the lessons and using data collection methods to measure the study's results. The researcher must take care in the planning of all lessons (both teacher- and student-centered). Additionally, the researcher must carefully design and implement all data collection methods including surveys, tests, and researcher observations. The researcher must always be sensitive to the needs and/or desires of students during the study's intervention.

Students will be critical to the success of this study. Students participating in this study must do so willingly. All student answers given as part of the data collection process must be honest. Dishonesty may jeopardize the findings of this study. Students may opt out of participating in this study, at any time.

Parents will also play a notable role in this study. Parents will need to sign any release forms that are sent home, as part of this study. Parents will also need to be supportive of any homework that is given, as a part of this study.

The lead teacher and principal are essential to this study's success. The full support of both will be necessary for the successful outcome of this study.

Statement of Resources

Resources that will be needed at the outset of this study include the following: student and parent consent forms, textbooks, projector access, pre- and post-intervention surveys, pre- and post-intervention tests, state standards, and IRB forms. Other resources may be needed, as the study progresses.

<div align="center">*Results*</div>

The pre-test for this study showed that the level of knowledge, regarding unit subject matter, was not high for either group being studied. Figure 1 shows data for the pre-test and post-test for group one. Figure 2 shows data for the pre-test and post-test for group two. Pre-test results indicate a mean score of 36.686 for group one and 31.857 for group two. These scores indicated that students did not have an in-depth knowledge of Middle East content.

The post-test for this study indicated an increased level of knowledge in Middle East content across both groups. Figure 1 shows post-test data for group one. This figure indicates that the mean score rose from 36.686 to 86.629. This indicates an increase in the mean score of 49.943. One unusual finding was that one student only improved in score by 23 percent, moving from 21 percent to 44 percent. This student's post-test score of 44 percent stood out as well below average.

The post-test data for group two, indicates weaker improvement, compared to group one, when comparing the percentage increase from pre- to post-test results. Group two increased by an average of 44.314 percent, to end at mean score of 76.171. Compared to group one, group two increased an average of 5.629 less. Furthermore, the class mean for on the post-test was 10.458

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percent less than the class mean for group one. It should be noted that group two began with a lower mean, than did group one.

Figure 1 (Group One – Pre-/Post-Test Results)		
Pre-Test	Post-Test	
		Group One / Pre-Test:
		Mean: 36.686
		Median: 36
		Mode: 29
		Group One / Post-Test:
		Mean: 86.629
		Median: 88
		Mode: 94
		Group One / Pre-/Post-Test Difference:
		Mean: 49.943
1284	3032	= Sum
36.686	86.629	= Mean · Mean Difference: 49.943

Figure 1. Group one and pre- and post- test scores.

Figure 2 (Group Two– Pre-/Post-Test Results)		
Pre-Test	Post-Test	Group Two / Pre-Test:
		Mean: 31.857
		Median: 33
		Mode: 24, 35
		Group Two / Post-Test:
		Mean: 76.171
		Median: 78
		Mode: 81
		Group Two / Pre/Post Test Difference:
		Mean: 44.314
1115	2666	= Sum
31.857	76.171	= Mean · Mean Difference: 44.314

Figure 2. Group two pre- and post-test scores.

Similar trends developed, with regard to interest survey data from the four classes studied. Figure 3 indicates that the pre-survey data for classes one and two combined show a mean interest score of 2.801 points out of a possible 5 points. The mean interest score on the post-interest survey for classes one and two combined rose to 3.018 points. This finding indicates

a mean increase for classes one and two combined of 0.217 points. Figure 4 indicates that the pre-survey data for classes three and four combined show a mean interest score of 2.73 points out of a possible 5 points. The mean interest score on the post-interest survey for classes three and four combined rose to 2.832 points. This finding indicates a mean increase for classes three and four combined of 0.102 point. Compared to classes one and two, classes three and four increased an average of 0.115 point less. Furthermore, the class mean for classes three and four combined on the post-interest survey was 0.186 of one point less than that of classes one and two combined.

Pre-Survey	Post-Survey	Figure 3 (Group One – Pre-/Post-Survey Results)	
		Group / Pre-Survey:	
		Mean: 2.801	
		Median: 2.67	
		Mode: 2.67	
		Group One and Two / Post-Survey:	
		Mean: 3.018	
		Median: 3.16	
		Mode: 2.67, 3.05	
		Group One / Pre-/Post-Survey Difference:	
		Mean: 0.217	
98.03	105.63	= Sum	
2.801	3.018	= Mean	Mean Difference: 0.217

Figure 3. Group one pre- and post-survey scores.

Pre-Survey	Post-Survey	Figure 4 (Group Two – Pre-/Post-Survey Results)	
		Group Two / Pre-Survey:	
		Mean: 2.73	
		Median: 2.71	
		Mode: 2.33, 2.95, 3.57, 3.90	
		Group Two / Post-Survey:	
		Mean: 2.832	
		Median: 3.07	
		Mode: 2.05, 3.10, 3.38, 3.62, 3.90	
		Group Two – Pre-/Post-Survey Difference:	
		Mean: 0.102	
95.54	99.13	= Sum	
2.730	2.832	= Mean	Mean Difference: 0.102

Figure 4. Group Two pre- and post-survey scores.

Lastly, the researcher observed no difference, with regard to student interest and class

participation between the group taught using teacher-centered teaching methods and the group

taught using student-centered teaching methods. Both groups had multiple students that appeared

to be bored. Conversely, both groups had multiple students who appeared to be interested in the

subject matter being covered. The researcher was unable to detect any significant difference in student interest through observation.

<div align="center">Conclusions and Recommendations</div>

<div align="center">*Conclusions*</div>

The pre- and post-test data indicate a considerable improvement of student content knowledge, with regard to Middle East content. Furthermore, the pre- and post- interest surveys show an increase in both groups with regard to student interest in Middle East content. Student performance seems to correspond with student interest, regarding content. Student interest does not seem to be affected greatly by the method of content delivery.

Students in group one were primarily taught using teacher-centered methods of instruction. These students learned Middle East content primarily through teacher lecture. The class increase for group one was greater (49.943 percent) than the mean class increase for classes three and four combined (44.314 percent). Likewise, the mean increase for group one, with regard to the pre- and post-interest surveys, was greater (0.217 out of 5) than the mean increase for group two (0.102 out of 5). The greater increase in student performance from the pre- to post-test for group one seems to correspond to the greater increase in student interest in Middle East content from the pre- to post-interest survey. The researcher is able to conclude, from these findings, that a correspondence seems to exist between student interest and student performance.

The odd finding from this study deals with student interest, with regard to different methods of content delivery. Much of the research reviewed showed that student-centered teaching methods seem to increase student interest, which, in turn, increases student performance. This study did not find similar results. This study, if anything, seems to indicate the opposite. The group taught using traditional, teacher-centered teaching strategies performed

better on the post-test and scored higher on the post-interest survey. Conversely, the group taught using student-centered teacher strategies did not perform as well as the group taught using teacher-centered teaching strategies. Furthermore, students taught using student-centered teaching methods also scored lower on the post-interest survey, compared to students taught using teacher-centered teaching strategies.

Recommendations

More research is recommended in this area. Specifically, more research needs to be undertaken, with a focus on comparing student performance in classes using various student-centered, teaching strategies, versus classes taught using more teacher-centered, teaching strategies. Much of the research seems to agree that an increase in student interest corresponds to an increase in student performance. This study concurs. The exact methods used to manipulate student situational interest is an area that warrants further study.

The consensus of professionals close to this area of study indicates that student interest does correspond to student performance. An increase in student interest often times correlates to an increase in student performance. Much of the literature reviewed for this study indicated this, and this research, itself, found similar results. An area that is more open to debate centers around exactly what strategies should be employed to increase student interest and/or performance. Many studies have found in which student-centered teaching strategies are the key to increasing student performance, but not all research agrees.

The researcher recommends that professional development activities should focus on teaching strategies that increase student situational interest. The researcher would encourage professional teachers to explore various different types of teaching strategies, from teacher

lecture to student groupwork, with a focus on how those strategies help to increase student situational interest.

Technology in the classroom should be a significant element in any social students program. Technology offers endless possibilities, with regard to way to increase student interest in the material being presented. The teacher may utilize historical speech via the Internet at www.youtube.com, connect classroom students to virtual penpals around the world with the use of webcams, or assign student presentations with must utilize creative PowerPoint technology. Regardless of the content, teachers are encouraged to incorporate technology, in any teaching strategy, to help increase student interest and performance.

This study was conducted using social studies content. As such, the National Council for the Social Studies (NCSS) has multiple grants available that could help in this area of research. The Fund for the Advancement of Social Studies Education (FASSE) supports research and classroom application projects to improve social studies education. Furthermore, the FASSE and the College and University Faculty Assembly (CUFA) have established a $10,000 grant that may help in this area. It supports inquiry in citizenship education. Lastly, the Christa McAuliffe Reach for the Stars Award provides $2,500 that helps teachers develop and implement innovative social studies teaching strategies. More information regarding these programs may be found at http://www.socialstudies.org/fasse/.

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Appendix A

Student Pre-/Post-Test

Geography (Middle East) Pre/Post Intervention Assessment

Part I Directions: Read the question and all possible answers before making a selection. Select the choice that best answers the question. Put a circle around the answer you select. (3 points per question. Total possible points for this section = 30 points)

1. Which of the following countries is NOT located in the Middle East?
    a. Turkey
    b. Iraq
    c. Russia
    d. Afghanistan

2. Which Middle-East country is the largest?
    a. Saudi Arabia
    b. Syria
    c. Israel
    d. United Arab Emirates

3. Which of the following is the main religion of the Middle East?
    a. Christianity
    b. Islam
    c. Buddhism
    d. Hinduism

4. What is the main economic export of the Middle East?
    a. Rice
    b. Seafood
    c. Oil
    d. Wheat

5. In 1948, which country was formed?
    a. Jordan
    b. Lebanon
    c. Saudi Arabia
    d. Israel

6. What is the main landscape in the Middle East?
    a. Rainforest
    b. Desert
    c. Savannah
    d. Deciduous Forest

7. Citizens of Israel are mainly?
    a. Jewish
    b. Muslim
    c. Arab

        d. Christian

8. What is the main language spoken by people in the Middle East?
   a. Arabic
   b. English
   c. Hebrew
   d. Chinese

9. Which country is the world's leading oil producer?
   a. Iraq
   b. Iran
   c. Turkey
   d. Saudi Arabia

10. What form of government does Iran have?
    a. Democracy
    b. Islamic Republic
    c. Monarchy
    d. Dictatorship

Part II Directions: Determine whether each of the following statements is True or False. Circle "T" for True and "F" for False. (3 points per question. Total possible points for this section = 15 points)

11. T / F The Islamic religion affects almost all aspects of life in Saudi Arabia.
12. T / F Most of the people who carried out the September 11, 2001 attacks on the World Trade center in New York and the Pentagon in Washington D.C. were from Iran.
13. T / F Farming is the main economic activity in Syria.
14. T / F The capital of Jordan is Damascus.
15. T / F The people of Israel and the Palestinian territories live side by side peacefully.

Part III Directions: Match the word to the left with the definition to the right. Write the letter of the correct definition on the blank line to the left of the word. (3 points per question. Total possible points for this section = 15 points)

16. ___ Dead Sea	a. This group ruled Afghanistan during the 1990s.
17. ___ Democracy	b. Process of taking salt out of seawater.
18. ___ hajj	c. Form of government in Iraq.
19. ___ Taliban	d. The lowest point on earth's surface.
20. ___ Desalinization	e. Religious journey

DO NOT STOP HERE: Turn to the map on the next page to answer the questions for Part IV.

[map omitted]

Part IV Directions: Place the letter from the map above on the blank line next to the correct choice below. (2 points per question. Total possible points for this section = 40 points)

___ Turkey	___ Yemen	___ West Bank
___ Iraq	___ United Arab Emirates	___ Baghdad
___ Jordan	___ Kuwait	___ Tehran
___ Israel	___ Afghanistan	___ Damascus
___ Syria	___ Qatar	___ Riyadh
___ Saudi Arabia	___ Iran	___ Kabul
___ Oman	___ Lebanon	

Appendix B

Student Pre-/Post-Interest Survey

Pre-/Post-Intervention Interest/Class Activity Survey   **CODE**

_____

Instructions: The list below contains many items about the Middle East AND many different types of classroom activities. Please indicate your level of interest in each area on a scale of 1 to 5. If you are not familiar with the area, please circle "NA". DO NOT WRITE YOUR NAME ON THIS SURVEY.

The Content Area Issue about the Middle East	Your Ranking					
	Not Applicable	Not Interested	Somewhat Uninterested	No Opinion	Somewhat Interested	Very Interested
1. Iraq War	NA	1	2	3	4	5
2. Oil Exports/Gas Prices	NA	1	2	3	4	5
3. Israeli/Palestinian Conflict	NA	1	2	3	4	5
4. Religion of Islam	NA	1	2	3	4	5
5. Middle Eastern Governments	NA	1	2	3	4	5
6. War in Afghanistan	NA	1	2	3	4	5
7. Terrorism	NA	1	2	3	4	5
8. Desert Communities	NA	1	2	3	4	5
9. Middle Eastern Religions	NA	1	2	3	4	5
10. Judaism	NA	1	2	3	4	5
11. Middle Eastern Agriculture	NA	1	2	3	4	5
12. Islamic Republic Governments	NA	1	2	3	4	5
13. Middle Eastern Architecture	NA	1	2	3	4	5
14. Middle Eastern Democracies	NA	1	2	3	4	5

15. Middle Eastern Wealth	NA	1	2	3	4	5
16. Middle Eastern Countries	NA	1	2	3	4	5
17. Middle Eastern Capitals	NA	1	2	3	4	5
18. Middle Eastern Landscapes	NA	1	2	3	4	5
19. Middle Eastern History	NA	1	2	3	4	5
20. Formation of Israel	NA	1	2	3	4	5
21. Formation of Middle East Nations	NA	1	2	3	4	5
Classroom Activity Style			Your Ranking			
1. Group Work	NA	1	2	3	4	5
2. Problem Solving	NA	1	2	3	4	5
3. Re-enactments	NA	1	2	3	4	5
4. Debate	NA	1	2	3	4	5
5. Drawing Maps	NA	1	2	3	4	5
6. Teacher Lecture	NA	1	2	3	4	5
7. Note Taking	NA	1	2	3	4	5
8. Class Discussions	NA	1	2	3	4	5
9. Using a Computer	NA	1	2	3	4	5
10. Videos	NA	1	2	3	4	5
11. PowerPoint Presentations	NA	1	2	3	4	5
12. Special Projects	NA	1	2	3	4	5
13. Worksheets	NA	1	2	3	4	5
14. Study Guides	NA	1	2	3	4	5

Any Additional Comments:

Peer Tutoring Upon Cooperative Learning Experiences in Basic Mathematics Skills

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Introduction to the Problem

Students' basic mathematics skills seem to be lacking in upper-level math coursework for high school students at an alternative school in Georgia. This severely hampers student performance in algebra, geometry, trigonometry, and applied mathematics courses. Ironically, students are able to perform more complex mathematic operations that do not require basic mathematic skills. That is to say that they are able to manipulate algebraic equations, perform matrix operations, solve triangles, and other operations, but are unable to consistently utilize basic math skills, when the need arises. When adding, subtracting, dividing, or multiplying negative numbers, students simply do not possess the skills necessary to do so. Consequently, they become frustrated, constantly ask basic math questions to which they should already know the answers, and their grades suffer, as a result. This is also a problem in many schools across the country.

Review of Literature

Basic Math Skills Deficiency

Basic math skills are important and are necessary to advance in mathematics and the sciences. Middle school students who cannot do basic arithmetic with ease will be hampered in their efforts to learn algebra and geometry in high school. Early math skill deficiencies during early education will severely compound throughout a student's academic career, producing an ill-prepared college mathematics student (Coughlan & Loveless, 2004). Also, in the article, "One + One = Zero," Field (2005) states:

> According to results of the third international mathematics and science study (TIMSS), U.S. students perform more poorly in math than many of their counterparts around the world. The same study indicates that even high school seniors who take advanced courses in math perform substantially below students in most other countries. (p. 2)

Consequently, the most popular college textbook is one on remedial math education. Almost every day at school, I deal with an exorbitant amount of questions pertaining to math skills that should have been learned by the students years ago in lower-level math classes throughout their education. For example, students have a difficult time performing basic addition that involves positive and negative numbers. Since this problem persists, not only at my school, but nation-wide, national studies show that most U.S. students leave high school with far below even minimum expectations for mathematical literacy and adults remain innumerate (Steen, 1999). Research has revealed, through testing and other means, many mathematics deficiencies across the U.S. Coughlan and Loveless report findings (2004):

> The United States has a well-documented deficiency in mathematics education. That national deficiency leaves students performing poorly on multi-step problems and in interpreting results. In 2003, the Organization for Economic Co-operation and Development (OECD) assessed how prepared young adults across the globe were to solve problems they would encounter later in life. In particular, OECD was concerned with problems requiring students to think flexibly and creatively in unfamiliar situations, rather than merely requiring students to recognize and solve a routine problem using mathematics. The test was given to tens of thousands of students in forty countries. The United States ranked 29th out of 40. Multi-step problem solving and interpretation of results are the heart and soul of operations research techniques, and the development of those key skills will be built into the real-world contexts of our operations research problems. (p. 57)

At this point, and for this action research plan, it is irrelevant why their basic mathematics skills are poor, so I will try to answer this question: How can I improve my students' basic math skills, and, ultimately, their performance in upper level math classes? In my situation, the best action plan I can pursue is additional instruction, along with peer-tutoring, since student work is solely completed on computer, and I do not prepare lesson plans or give lectures.

Peer Tutoring for Remedial Math

Peertutoring is the process by which a pupil, with guidance from a teacher, helps one or more students at the same grade level learn a skill or concept. Many benefits for both partners have been shown in peer-tutoring programs: learning of academic skills, development of appropriate social skills, and enhancement of peer relations. Peer-tutoring programs can help students who have equal but different expertise or students who have more skills or ability and who teach others who are less skilled. Teachers can simultaneously engage all students in learning and practicing basic math or problem-solving skills using peer tutoring. This instructional strategy reinforces math facts, computational skills, and math concepts. Examples of math content suited for peer tutoring include addition, subtraction, multiplication, number concepts, vocabulary, measurement, and fractions. This list is not exhaustive; most math content can be practiced using peer tutoring (Robinson, Scholfield, & Steers-Wentzell, 2005). The main concept that all three educational researchers contended for was that teachers must be sensitive to the fact that any child gets distracted and teachers face the challenge of being constantly flexible when adjusting for students' needs. All studies revealed the need for teachers to take extra measures that promote engaged, on-task behavior, but the studies found a variety of methods in which to do so. As all the studies suggested, every technique does not work for every student and it is important for the teachers to try multiple techniques in order to test which works best for their classroom. Also, the educational researchers found the similar correlation that when students' engagement increases, so does their academic achievement.

Will including additional instruction, followed by peer tutoring in a cooperative learning environment, increase basic math skills? Robinson et al. (2005) conducted a study concentrating on the effect of peer tutoring and its effectiveness during math lessons. They also mentioned the

math deficiency of U.S. students as compared to students in other countries. Their research analysis of tutoring in primary and secondary grades found that almost 87% of the studies that measured achievement showed higher academic achievement by students who were involved in peer tutoring than by students who were not involved (p. 7). Their study revealed that peer-tutoring is an effective tool to implement to increase mathematics skills. Robinson et al. (2005) stated that their study revealed that, during peer tutoring, the tutor benefits, as well, by increasing his math skills during tutoring through additional practice carrying out computations and solving problems. Most importantly, one conclusion from this study revealed that peer tutoring alone was not the best approach in increasing basic math skills; peer-tutoring along with cooperative learning and other peer-assisted approaches also improve achievement. According to the National Council of Teachers of Mathematics, cooperative learning also provides a small group environment in which students may feel more comfortable asking each other questions, discussing techniques or ideas used in problem solving, and offering each other constructive criticism (Ding, Li, & Piccolo, 2007).

The basic research question for this study is the following: Can supplementing computer math lessons with lectures, along with peer tutoring, improve math grades? An improvement in math grades will undoubtedly lead to increased math skills. Interestingly, Robinson et al. (2005) suggest that the role of tutor need not be reserved for high-achieving students. Since this is true, an average student, academically speaking, serving as a peer-tutor will greatly reinforce and develop his own math skills, perhaps, eventually leading to becoming a high-achieving math student. At my school, this finding will greatly aid my action plan in that there are only two or three high-achieving math students within the population. Additional instruction and peer tutoring are proposed to achieve the result of improving basic math skills.

Data Collection and Results

Data collection

Subjects

The participants in this study were 9th- through 12th-grade Algebra I, Algebra II, Concepts of Applied Algebra, and Concepts of Applied Problem Solving students. Their ages ranged from 15 years to 17 years. The school is an alternative school in an urban area. Throughout the school year, the school receives students from county and city schools. After an offense is committed by a student at their home school, they are required to attend a tribunal hearing. Examples of offenses are drug possession, weapon possession, or fighting. If the offense does not warrant a stay at a correctional facility, the student is assigned a number of days to serve in the school. The number of days assigned ranges from 15 days to 270+ days, with 180 days considered to be the entire school year. The maximum number of high school students the school is allowed to maintain is 15 per teacher. There are four teachers; therefore, the maximum is 60 students. At present, there are 31 students (4 female and 27 male.) The student population is approximately 16% Hispanic, 13% African-American, and 71% Caucasian, and 80% qualify for free or reduced lunch. I see no reason for this population to be significantly different in subsequent school years. Students will not be randomly selected.

Materials

The school does not have a typical classroom setting. That is to say, that there are no separate classrooms, lesson plans, lectures, or homework. All students share the same room and work is completed on computer by each student at their own pace, utilizing Nova Net software. Nova Net consists of several lessons and tests for any course required by the student's home school, which are graded by the software. A student is allowed to take lessons or tests multiple

times until they receive a passing score. Upon completion of all lessons and tests for a course, credit is awarded for the course at the student's home school. The student is instructed to take notes that are allowed to be used during testing.

No additional materials were necessary to be procured by the school during the procedure. Pencils and paper were provided by the school for student use during note-taking and problem solving.

Procedure

For this action research study, I utilized a conference room adjacent to the classroom, equipped with a white board, tables, and chairs. I conducted 20-minute lectures (additional instruction) for my high school mathematics students two times per week for 4 weeks. The lectures consisted of lessons on how to perform basic mathematics operations, such as adding, subtracting, multiplying, and dividing positive and negative numbers. I worked sample problems after the lecture to instruct students on various techniques and procedures that may be employed by the student when working in the peer-tutoring groups afterward. The use of calculators was prohibited when working problems on their own since this would be counterproductive. After each lecture, I divided the group into groups of three and assigned a peer tutor to each group. I assigned several problems of the sort that were worked during the lesson for the group to complete under supervision of the peer tutor of each group, and myself. I closely observed the peer tutor of each group as well as the other group members. The peer tutor was a student I deemed to have strong basic mathematics skills. Each week, I changed the members of the groups and peer tutors for each group.

Results

I compared each student's lesson grades from the first of the year (without additional

instruction and peer tutoring) to lesson grades two weeks after the study was completed. Only

scores were used during the evaluation part of assessing the results (see Figure 1).
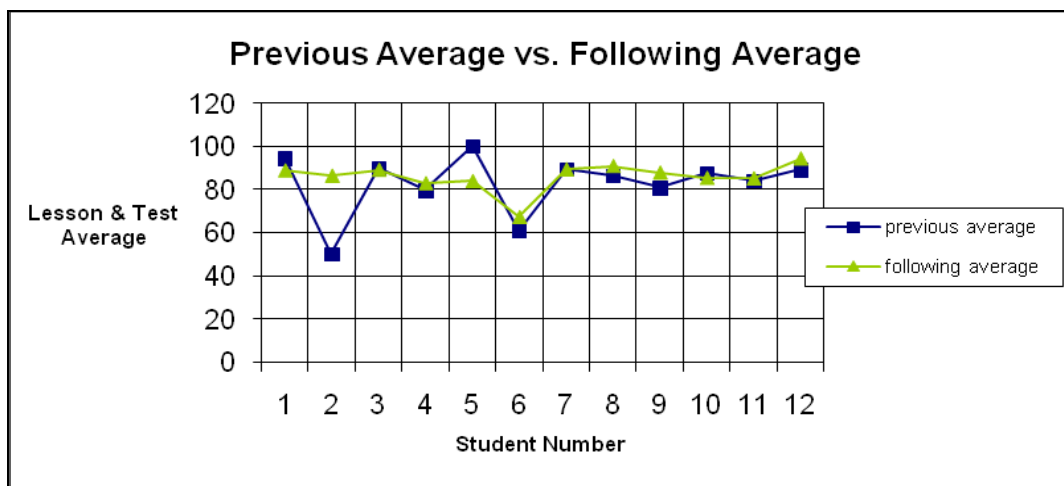

Figure 1. Relationship between student lesson and test grades before this project and

student lesson and test grades 2 weeks after the project was completed.

Conclusions and Recommendations

Out of the 12 students who participated in this action research project, 7 students showed

an increase in average, 1 showed no change in average, and 4 showed a decrease in average. The

population mean increase (15.6%) shows the mean increase in average was greater than the mean

decrease (6.2%) in average. These results show more students benefited from this project than

not. However, the data does not show that this project was the only influence on improvement in

grades. Data in this study can be deemed reliable and valid within the confines of action

research. Currently, there is no indication that grant money has been provided to support further

research in this area for the school's students.

I would recommend that teachers who view this data take a long look at how we teach basic math skills in the early stages of education. Calculators are used all too often in elementary and middle school classrooms. Many students in upper-level math classes suffer as a result of teachers allowing the use of calculators in early math classes. This is not the only cause of these difficulties, however, but will go a long way in aiding in the success of our math students as they progress throughout their educational journey. Our attention needs to be focused on teaching our students the process of solving a problem, as opposed to simply getting an answer. Students are not likely to use most of the mathematics they learn during their education after their high school years. We are reminded of this fact every time a student asks a math teacher, "When will I ever use this stuff?" They will only use the logical thinking skills they have developed in the math classroom unwittingly, not the exorbitant amount of formulas and problem types they've memorized or encountered. Mathematics classes are designed to teach students to think in a logical manner.

In this case study, the lack of technology plays a huge role in the success of our students. The only technology that is of use with regard to this area of study, is the student's brain. Professional development could possibly be constructed to address the issue of removing calculators from elementary classrooms and developing lesson plans that better develop the logical thinking skills of students. Design lesson plans that teach basic math skills, not how to operate a calculator. Calculators have their place in education, just not in the early years before basic facts have been learned. Calculators should be used in upper math classes only when graphing or calculations of complex problems are necessary, and only after the mastery of basic math skills has occurred.

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Using Technology in Literature and Language Arts Instruction

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Introduction to the Problem

Video and other forms of multimedia presentations have become ubiquitous in the classroom, and with good reason. PowerPoint presentations are versatile and easy to create. There are many high-quality film adaptations of classic books and dramas, and allowing students to watch these movies in class can stimulate their interest and increase their understanding of the story. The challenge is to keep students from being "passive" learners and to actively engage them in classroom activities. The Tennessee state standards call for students to learn how to interpret different types of media, including movies and other forms of multimedia.

This action research project will study students' responses to multimedia presentations, and the most effective ways to use them in the classroom. This project was conducted with students in two high school English honors classes.

Review of Literature

There is an impressive body of research on incorporating technology into lectures and helping students to learn essential computer skills. This research spans many aspects of incorporating technology into the classroom, including using PowerPoint presentations and movies to facilitate learning.

Cramer (2007, p. 126) encourages teachers to use "learning objects" to supplement their lessons. She defines "learning objects" as "instructional materials found on the Internet that can be used to illustrate, support, supplement, or assess student learning." These can include still images, video clips, or audio recordings relating to the curriculum and the lesson. Learning objects are not designed to replace teaching or to be used for an entire course or unit. Instead, learning objects are smaller resources that are used to support classroom lessons or to provide

students with background knowledge. They are most useful when teachers use them to illustrate abstract or complicated ideas.

Cramer draws a distinction between learning "from" and "with" technology. Learning "from" technology involves drill and practice software or online quizzes. Although students usually do not learn anything new from these drill and practice exercises, they can help students to develop an existing skill. When used correctly, drill and practice can improve students' standardized test scores. By contrast, when students learn "with" technology, they use video or the Internet to gather and analyze information. Learning with technology requires students to use higher-order, critical thinking skills. One example of this is the use of WebQuests, which require students to explore an issue from multiple perspectives or to solve a problem. Cramer cites a 2003 study by Goldman; this study found that students who had practice connecting instruction to real-world problems had higher test scores.

One of the obvious limitations of movies, PowerPoint, and other multimedia presentations is that they may force students to be passive learners. This lack of interactive, constructivist learning is the subject of the article,"Using PowerPoint as a Lens to Focus on Linearity in Teaching," by Kinchin, Chadha, and Kokotailo (2008). PowerPoint, by its very nature, presents a fixed and linear set of facts. The sequence in which the information is presented is chosen by the lecturer, not by the students, and it doesn't encourage class discussions. Kinchin et al. insist that PowerPoint should be used as a supplement to instruction, not as a replacement for it. Students need information in the form of an activity or a handout, preferably not a printed version of the PowerPoint slides. With the addition of instruction, class discussion, and the use of tangible handouts, Kinchin et al. conclude that it is possible to use PowerPoint in a constructivist classroom.

One of the best reasons for using technology in the classroom is that it helps students to become familiar with its use and application. "Media literacy," which includes the ability to interpret movies, has become part of the curriculum in most schools. Bruce discusses the multiple definitions of media literacy in his article, "Visualizing Literacy: Building Bridges with Media" (2008, p. 265). One definition is the ability to "access, analyze, evaluate, and communicate messages in a variety of forms." The one thing that is consistent with all of the proposed definitions of media literacy is that they include both the ability to create and to analyze a variety of media.

Bruce's article notes that analyzing traditional print media is often considered the most important form of literacy. However, he cited studies that showed that students working with media and online texts showed an improvement in print literacy. This article cites a 2002 study, by Smagorinsky, which defines "composition" in broad terms. Both print and multimedia composition involve the use of tools, an understanding of the conventions and genres in which one is working, a process of planning and revision, the use of prior knowledge, and the acquisition of new skills (Bruce, 2008). Given that both traditional writing and multimedia composing involve some of the same thought processes, it is not surprising that these skills reinforce one another. The author believes that students who struggle with traditional print media have a hard time "seeing" their ideas on paper. Past research has shown that, for many struggling students, graphic organizers are a helpful tool to organize their thoughts. Computers offer an easy way for students who struggle with "seeing" their ideas to create visual representations of them. The author noted that all of the students in his study expressed a "frustration" with traditional writing. They found that editing video and using a camera was an easier way to

communicate their messages. It seems plausible that students might also respond well to the use of video in the classroom.

Mullen and Wedwick (2008) discuss the advantages of having accessible technology in the classroom. The authors focus primarily on the use of YouTube, digital stories, and blogs. Mullen, who taught language arts in a rural, K-8 school, investigated the effects of incorporating technology in lessons about literature and creative writing. There are several obvious advantages to incorporating technology in more traditional lectures. The presence of online video archives, such as youtube.com and teachertube.com, mean that videos no longer have to be reserved. Teachers and students have easy access to a large database of videos. As Mullen and Wedwick noted, these videos are especially useful for teaching concepts in vocabulary and grammar; videos from *Schoolhouse Rocks* teach students about the parts of speech.

The Mullen and Wedwick (2008) article cautions teachers to be in control of the use of technology in their classroom; some videos posted on YouTube, or elsewhere on the Internet, might not be appropriate for the classroom. Another concern that many teachers face is the temptation to focus first on the media and second on the content.

Vetrie's article, "Using Film to Increase Literacy Skills" (2004), also cautions against allowing students to be passive viewers. Although NCTE has recognized that film has an important role in a literacy classroom, it must be used correctly to foster students' critical thinking skills. Vetrie (2004, p. 40) cautions against "letting the film do the teaching." Many teachers misuse films; instead of asking students to be active participants in discussions or in constructing their own interpretations, they use movies as a reward or to take a break from class lectures. The author describes this application as "a practice that is unethical as well as illegal" (Vetrie, 2004, p. 40).

In order to use film as an effective tool for teaching literacy, teachers have to build students' background knowledge and tap into their schemata. To do this, the author suggests presenting background information about the movie and using outside resources to enhance understanding (Vetrie, 2004). Teachers could also make sure that students were actively engaged by having them complete double-entry journals about the films and by giving them questions to check for understanding. If used correctly, film can be used to increase students' literacy skills; the author notes that students who were engaged in the film were more successful with their writing and discussion prompts.

<div align="center">Data Collection and Results</div>

The focus of this literature unit was Arthur Miller's play, *The Crucible.* Though this play is historical fiction and takes place during the Salem Witch Trials of 1692, Miller wrote it as political commentary on Senator McCarthy's investigation of suspected Communists. To help students understand the historical context in which this play was written, they watched video clips of McCarthy's testimonies and a clip from the film, *Good Night and Good Luck.* After students had read and discussed the play in class, they watched the film version of *The Crucible*.

There were three tools used for data collection and evaluation: the pre-test, the post-test, and an interest survey. The pre- and post-tests were identical, and had six, multiple-choice questions about *The Crucible* and its historical context. The purpose of this test was to measure how much students had learned (see Appendix A). The interest survey measured students' reactions to using the film, the historical film clips, and the movie as components of classroom instruction (see Appendix B).

The pre-test shows that the level of knowledge about the play and its historical context was not high. Figure 1 shows the breakdown of students' individual scores on the pre- and post-tests. The average number of questions answered correctly on the pre-test was 1.3.

Out of 47 students, 45 answered at least one more question correctly on the post-test than on the pre-test. The average score on the post-test was 3.9 questions answered correctly out of 6. This shows an average improvement of 2.6 questions answered correctly out of 6 (see Figure 1).

The survey showed that students were familiar with the use of technology as a component of a class. All of the students said that they had viewed movies, done WebQuests, or had online activities as part of another class. None of the students felt that the use of video clips was a distraction, although three students responded that they did not think it made a difference.

All of the students said that viewing the video clips helped them to understand the historical context of both the Puritans and the McCarthy hearings. Anecdotal evidence also suggests that this was a positive experience. In class, students seemed to be engaged when watching the videos, and they were more likely to participate in class discussions after watching a video clip or a "learning object."
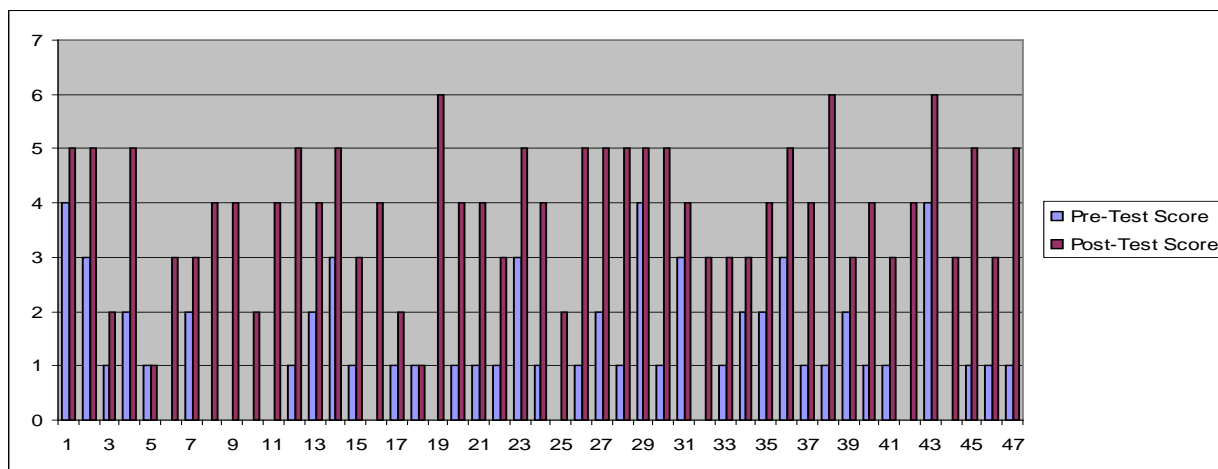

Figure 1. Pre- and post-test scores.

Conclusions and Recommendations

The results of the test showed that the majority of the students improved their scores after the 2-week unit concluded. The use of films and video clips seemed to make the lessons more dynamic and seemed to engage the students; the qualitative data from the survey supports this.

The use of film was probably most helpful for explaining the historical context in which the play was written. In class, the students were able to point out the parallels between Senator McCarthy's interrogations and the witch hunts of the play. The film of *The Crucible* also allowed the teacher to point out the historical location of Salem and to discuss Puritan culture, in greater detail.

There are some obvious limitations to using video clips, movies, and other "learning objects" in the classroom. Not all schools have the technology or the resources to allow teachers to use video clips in class. It is also important to note that not all students have background knowledge in looking for parallels between text and video.

It is possible that the results of this study would be different if the students in the sample were not in the honors program. All of the students in this English class were honors students, and they had higher than average reading levels. It is also important to note that all of the students said that they had used WebQuests or other forms of multimedia in other classes; they had the necessary background knowledge to interpret the video clips.

Despite the limitations of this research project, it is clear that visual aids can enhance students' understanding and help them to draw connections between concepts. The best way to continue this research would be with more qualitative data and feedback from the students on how best to integrate video into a lecture or class discussion.

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Appendix A

***The Crucible* Pre- and Post-Test**

1. **How does Miller describe Salem?**
    1. Wild
    2. Sparse
    3. Beautiful

2. **To what other historical event does Miller compare the witch hunts in Salem?**
    1. The Holocaust
    2. The McCarthy hearings
    3. The Scottsboro Trials

3. **In the play, what is Reverend Parris' motivation for bringing people to trial for witchcraft?**
    1. His daughter has died, and he believes that witches are responsible.
    2. He is bribed.
    3. He is worried about his position.

4. **What does the forest symbolize?**
    1. The unfamiliar.
    2. The dark times that the Puritans faced when they first settled in America.
    3. Growth and possibilities.

5. **How did Abigail's parents die?**
    1. They were executed for witchcraft.
    2. They died on the journey from England.
    3. They were killed in King Phillip's War.

6. **What is metonymy?**
    1. The use of characters as types rather than as individual people.
    2. A literary technique in which the author uses the same number of syllables in each line.
    3. The use of dialogue to talk about other events in the play instead of showing them.

Appendix B

Post-Unit Survey

1. **Did the use of multimedia clips and presentations, such as the "Virtual Tour of Salem" help you to understand *The Crucible* and the history of the Puritans?**

    _____YES _____NO _____MADE NO DIFFERENCE

2. **Did you find that the use of PowerPoint presentations, video clips, or sounds was a distraction from the content presented in the lectures and discussions?**

    _____YES _____NO _____MADE NO DIFFERENCE

3. **Did you use the extra materials that were available over the Internet?**

    _____YES _____NO

    If so, did they help you to prepare for the final test or to learn the material?

    _____YES _____NO _____MADE NO DIFFERENCE

    4. Have you done webquests or online activities as part of other classes?

    _____YES _____NO

Enhancing American Government through Multiple Intelligences

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Education 590, Spring 2009

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Introduction to the Problem

There are many different learning styles in the education field and every student has a preferred style. Some students prefer lecture and bookwork, while other students prefer group discussions and group work. Through a 2-week teaching unit, I intend to discover if the Multiple Intelligence theory is preferred over traditional teaching methods, such as lecture and bookwork. In my study, I will answer the following questions: Does traditional teaching enhance student learning, or does using newer theories, such as the Multiple Intelligence theory, enhance student learning? What is the best way to teach students? Does the use of Multiple Intelligence theory affect gain in student knowledge? How does the use of Multiple Intelligence theory affect student attitude toward school? Does the teacher believe that the use of Multiple Intelligence theory will make a difference in student academic process?

Review of Literature

Learning Style

According to Dunn and Dunn (1993), learning style is the way each individual begins to concentrate on process, internalize, and remember new and difficult academic information or skills. According to Kelly (2004), there are three types of learning styles: visual, auditory, and tactile/kinesthetic. Visual learners prefer visuals and handouts; they like pictures. Auditory learners prefer lectures, and tactile/kinesthetic learners prefer hands-on experiments. The two types of teaching methods on which I will be focusing are traditional teaching and the Multiple Intelligence theory.

Traditional Teaching

Traditional teaching methods include lecture, or teacher-direct instruction. According to Salsbury (2006), teacher-direct instruction occurs when the teacher delivers content-focused

information to students using specific materials to support instruction. An example of teacher-direct instruction is lecturing. McAuliffe and Eriksen (2002) believe that lecture can serve three purposes: to provide information, to motivate or inspire a group, and to that it provide a common frame of reference to all students. According to Sullivan and McIntosh (1996), effective lectures include educator-student interaction, two-way communication, educator-student questions, shared responsibility for active learning, and limited note-taking required (students have copies of lecture notes). Salsbury (2006) states that direct-instructional methods can improve student performance with clearly identified student objectives, structured content delivery, and monitoring of progress. However, direct-instruction only stimulates students that are visual learners. Not all students learn in the same way.

Criticisms of Traditional Teaching

Criticisms of traditional teaching include lectures are boring, lecture provides little opportunity for high affect, and lectures inevitably suffer from lack of direct connection to experience (McAuliffe & Eriksen, 2002).

According to Sullivan and McIntosh (1996), there are ways to give an effective lecture and an ineffective lecture. Some characteristics of ineffective lectures include when the educator talks for the entire amount of time allotted, there is only one-way communication, there are no questions asked to the educator or the students, the student depends on the information given, there are no student activities, and extensive note-taking is required.

Multiple Intelligence Theory

The Multiple Intelligence theory includes all three learning styles. Multiple Intelligence theory is based on the premise that everyone has a multiplicity of intelligences (Gardner, 2005).

These intelligences include linguistic, logical mathematical, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal, and naturalist. Gardner (2005) defines these intelligences as follows:

1. Linguistic intelligence: The intelligence of a writer, orator, or journalist.

2. Logical mathematical intelligence: The intelligence of a logician, mathematician, scientist.

3. Musical intelligence is the capacity to create, perform, and appreciate music.

4. Spatial intelligence: The capacity to form mental imagery of the large world of the aviator or navigator, or the more local world of the chess player or the surgeon.

5. Bodily intelligence: The capacity to solve problems or fashion products using your whole body, or parts of your body, like your hands or mouth. This intelligence is exhibited by athletes, dancers, actors, craftspersons, and, again, surgeons.

6. Interpersonal intelligence: Involves the understanding of other persons--how to interact with them, how to motivate them, how to understand their personalities. This skill is important for people in business, teachers, clinicians, and those involved in politics and religion.

7. Intrapersonal intelligence: The capacity to understand oneself--one's strengths, weaknesses, desires, and fears.

8. Naturalist intelligence: The capacity to make consequential distinctions in nature-- between one plant and another, among animals, clouds, mountains, and the like.

Using the Multiple Intelligence theory does not mean that you have to incorporate each intelligence into each separate lesson, but it is useful to students if the teacher does try to incorporate each intelligence into the teaching unit (Kelly, 2004). For example, I could play the national anthem, when discussing America's independence from Britain, and, then, as a class, discuss what the anthem means.

Multiple Intelligence theory does not constrict one learning style; it concentrates on involving all learning styles, and gives students variations of the information in different formats, such as lecture, critical thinking skills, discussions, cooperative learning (group work), role-playing, and debates.

Criticisms of Multiple Intelligence Theory

Criticisms of teaching Multiple Intelligence theory in the classroom include that it does not prepare students for standardize testing, it wastes too much time in the classroom, and there is no scholarly evidence of success (Mathews 2004).

<p align="center">*Data Collection* and Results</p>

Participants

Participants included 31, 12th-grade, students. The participants in this study will be students from my American Government class at a public high school located in a suburban area in Hamilton County, Tennessee. My study includes two samples groups. One sample group is the combination of my first and third period classes, comprised of 20 participants, with 14 males and 6 females. The majority of the sample is Caucasian (89%); the other 11% percent are African American. Out of my first and third periods, all of the students are at or above grade level in mathematics and reading. There is one special needs student.

My second sample group is my second period class. This sample size is 12. This population includes seven males and five females. The majority of this sample is also Caucasian (83%); there is one Hispanic student (8%) and one African American student (8%). In this sample, everyone is at or above reading level in mathematics and reading. Students are not randomly selected.

Materials

Materials used to conduct my research project include a pre-test and a post-test (see

Appendix A). The pre-test and post-test are exactly alike. The test is an 11-question, fill in the

blank test, using a word box. Each question is worth nine points. Grading is as follows: A = zero

wrong, B = one wrong, C = two wrong, D =three wrong, F = four or more wrong. The grading

scale is in accordance with the school's grading scale. Other materials that are included in the

lesson plans (see Appendices B and C) include a computer with projector, DVD and VHS

players, a class set of Prentice Hall Magruder's American Government textbooks, and access to

the computer lab. The classroom has six rows of desks, with five desks in each column. This

setup makes it easy to put desks together to do group work, if needed.

Procedure

I explained to students that, throughout the next 2 weeks, I would be using either

traditional method of teaching their class, which would include lectures and bookwork (see

Appendix B), or I would use Multiple Intelligence theory, which would include some lectures,

bookwork, group work, and hands-on lessons (see Appendix C). I then told the students that I

would be using their pre-test and post-test scores for research in my study. I explained to the

students that the study introduces the unit, "Foundations of Government," to all students,

however, students in periods one and three would be taught the unit using the Multiple

Intelligence theory, and the students in period two would be taught the same unit, but with the

traditional method of teaching.

The students were then told that the purpose of the study was to compare traditional

teaching to Multiple Intelligence theory, and to try to determine which teaching style is better. In

attempting to make this determination, I will compare the results from the pre-test and post-test

from periods one and three to those of period two. My intention of presenting the unit differently

to the students is to see if traditional teaching methods enhance student learning, or if newer theories, such as the Multiple Intelligence theory, better enhance student learning.

The students were not told that they would have the same post-test in 2 weeks. The purpose of giving the same post-test to the students 2 weeks later is to see if using the Multiple Intelligence theory produced any gain in student knowledge. Many students will study for a test, however, after students have been tested, most of the information is lost. By giving the students the same post-test, 2 weeks later, I want to see if students retained information better by traditional teaching or by lessons that included Multiple Intelligence theory.

Results

In each class, everyone gained knowledge. Although students failed in both sample groups, their post-test scores were better than their pre-test scores, proving that students can acquire knowledge with both learning styles. However, I predicted that the participants in periods one and three score higher on the post-test than the participants in period two, which did occur. In periods one and three, 90 percent of the participants passed the post-test, whereas in period two, 83 percent passed the post-test (see Figure 1). Although period two did not have as many students passing the post-test, period two did have 50 percent of their sample passing with As, whereas periods one and three had only 40 percent passing with As.
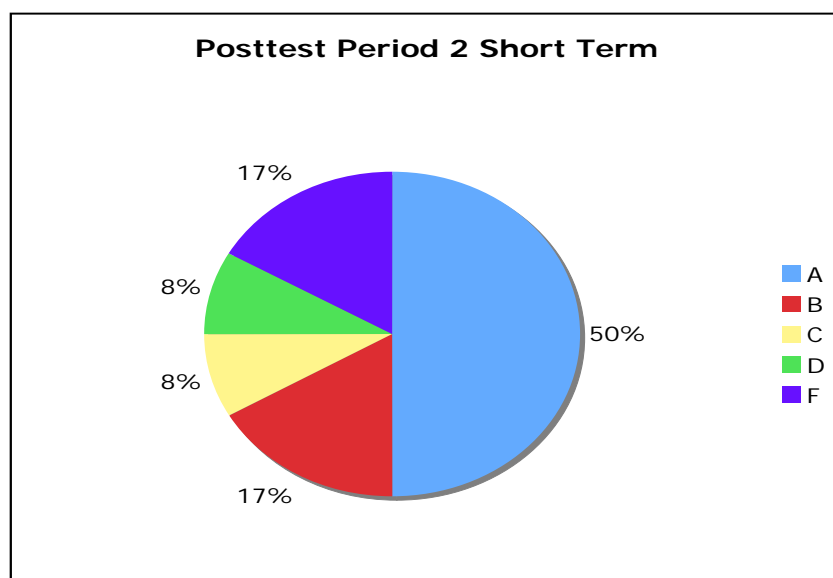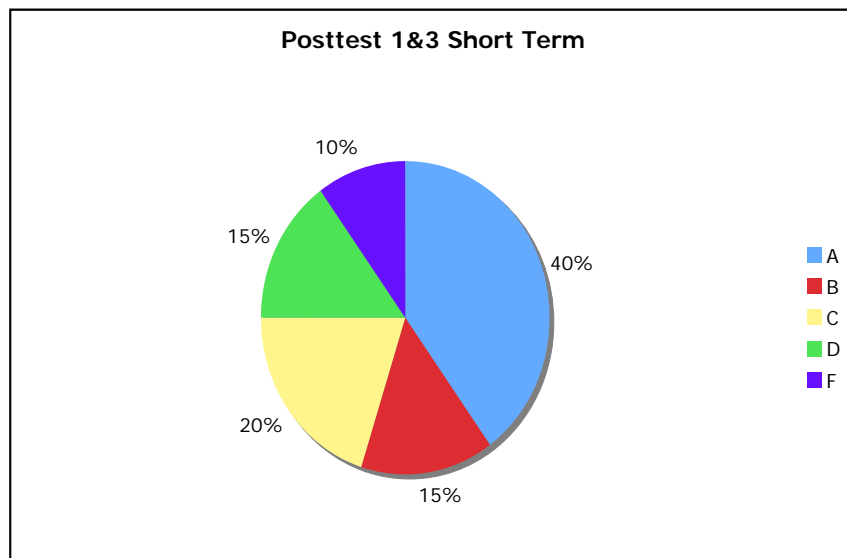
Posttest 1&3 Short Term

Posttest Period 2 Short Term

Figure 1. Short-term gains for both groups.

When I gave the same post-test, 2 weeks later, the results changed drastically (see Figure 2). Both groups scored lower. The students in periods one and three retained the information longer than did the students in period two. In periods one and three, 85 percent of the participants passed; in period two, 70 percent of the participants passed. Overall, 75 percent of periods one and three received a grade of A, B, or C. In period two, only 50 percent received a grade of A, B, or C.
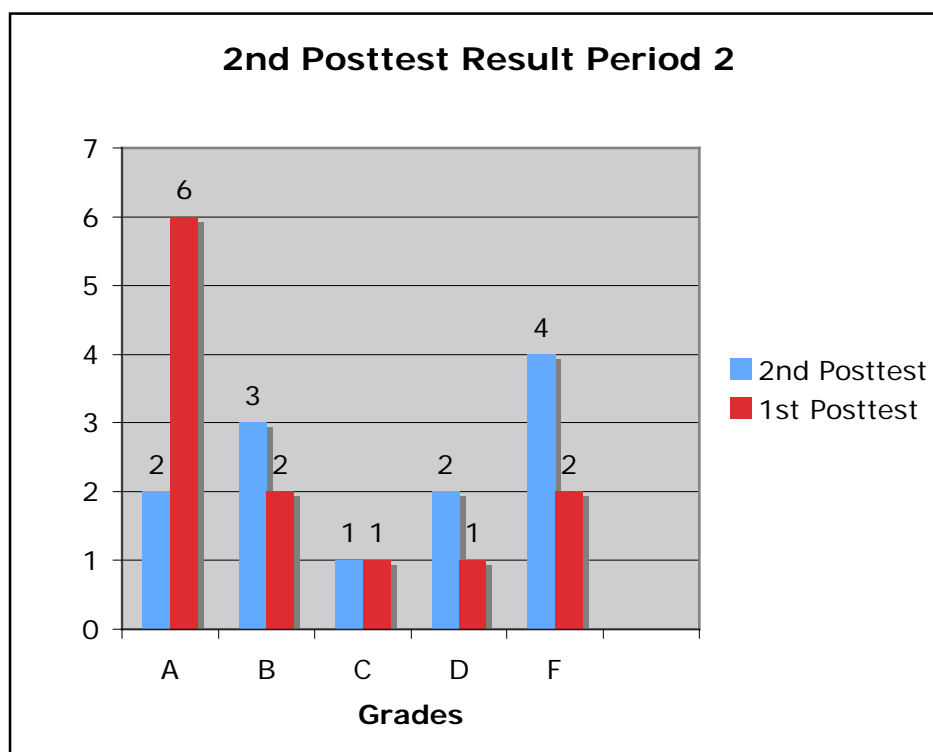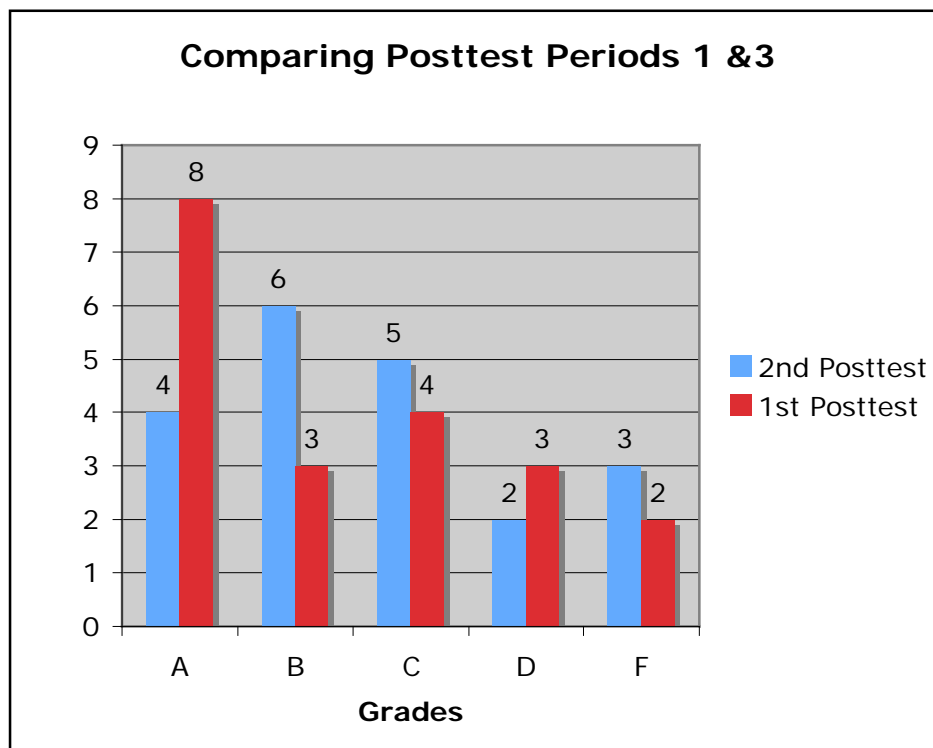
Figure 2. Long-term gains for both groups.

Conclusions and Recommendations

Conclusions

The purpose of this study was to compare traditional teaching method to Multiple Intelligence theory and to answer the questions: Does traditional teaching enhance student learning, or does using newer theories, such as the Multiple Intelligence theory, enhance student learning? What is the best way to teach students? Does the use of Multiple Intelligence theory affect gain in student knowledge? How does the use of Multiple Intelligence theory affect student attitude toward school? Does the teacher believe that the use of Multiple Intelligence theory will make a difference in student academic process?

I predicted that Multiple Intelligence theory would enhance student learning and affect gain in student knowledge. However, both styles of teaching enhanced student knowledge. Participants did better on post-test than pre-test. I was correct by predicting that the Multiple Intelligence theory would affect the gain in student knowledge. Periods one and three had 15 percent more participants passing the second post-test than did period two.

I believe that the participants enjoyed the variety of teaching styles in period one and three. In period two, students would ask me if we could do what the other classes were doing. I did not have a survey, so this information was from my observation in class. I believe that the use of Multiple Intelligence theory will make a difference in student academic process because of the second post-test results. The students retained the information longer. I also believe they enjoyed the interactive activities because there was a lot of smiling when we would debate or have class discussions. There was a lot more class involvement in periods one and three. In period two, I would ask questions to see if the students understood the information, and there was little to no response.

Recommendations

There were some variables affecting my conclusions, such as most of the students that returned the parental consent form were A and B students.

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Appendix A

Pre-test/Post-test

Fill in the blank, using the word box:

Legislative	Oligarchy	Judicial	Executive
Precinct	James Buchanan	Charter	Political Party
Magna Carta	Grover Cleveland	James Madison	Confederation

1. Every government has and exercises three types of power _____, _____, and _____.

2. An _____ is a government in which power to rule is held by a small, usually self-appointed elite.

3. A _____ is an alliance of independent states.

4. The _____ included such fundamental rights as trial by jury and due process of law- protection of life, liberty, or property.

5. A _____ is the smallest unit of election administration.

6. A_____ is a group of people who seek to control government through the winning of elections and holding of public office.

7. Each colony was established on the basis of a _____, a written grant of authority from the king.

8. A group of determined barons forced King John to sign the _____- the Great Charter- at Runnymede in 1215.

9. _____ was the fourth President and he helped frame the Bill of Rights.

10. _____ was the fifteenth President and he was the only President that never married.

11. _____was the first Democrat elected after the Civil War and was the twenty -second and the twenty-fourth President.

Appendix B

Chapter 1 & 2 American Government
Foundations of Government

Subject: American Government
Grade Level: 12th Grade
Time/Duration: 80 minutes
Day: 3

Goal(s)/Standards:
>Understand the United States political beginnings
>Understand the Coming of Independence
>Understand the Critical Period

Objectives: Students will be able to:
>Identify political beginnings
>Explain why the thirteen colonies wanted their independence
>Explain the importance of the Continental Congress

Introduction: What are some characteristics that you would want in a candidate if you could hand make him/her?

Lesson Sequence:
1. Explain to students what we will do today: Lecture on the foundations of government and then some bookwork.
2. Pass out questions that students need to answer during lecture.
3. Ask students if they have any questions when the lecture is over.
4. Ask students questions about the lecture, to make sure they understand concepts such as why the colonies wanted their independence from Britain, why did the Articles of Confederation fail, etc.
5. Tell students to turn in questions from lecture.
6. Tell students to do bookwork page 39, 1-5 and page 47, 1-4.
7. Tell students to turn in bookwork when finished and to read the newspaper until the bell rings.

Closure: Teacher will ask students to write on a piece of paper why we needed a new government?

Instructional Materials/equipment:
1. White Board
2. Textbook
3. Lecture Questions

Assessment Procedures:
1. Teacher will observe during lecture.
2. Teacher will grade lecture questions
3. Teacher will grade bookwork.

Appendix C

Chapter 1 & 2 American Government
Foundations of Government

Subject: American Government
Grade Level: 12th Grade
Time/Duration: 80 minutes
Day: 3

Goal(s)/Standards:
> Understand the United States political beginnings
> Understand the Coming of Independence
> Understand the Critical Period

Objectives: Students will be able to:
> Identify political beginnings
> Explain why the thirteen colonies wanted their independence
> Explain the importance of the Continental Congress

Introduction: What are some characteristics that you would want in a candidate if you could hand make him/her?

Lesson Sequence:
1. Explain to students what we will do today: PowerPoint presentation on foundations of government and "Creating a Government" activity.
2. Handout questions on Power Point.
3. Start Power Point and lecture.
4. Tell students to answer questions from PowerPoint.
5. Ask students if they have any questions when the lecture is over.
6. Ask students questions about the lecture, to make sure they understand concepts such as why the colonies wanted their independence from Britain, why did the Articles of Confederation fail, etc.
7. Explain to students, that they are to do, the activity "Creating a Government."
8. Assign students into groups, in different sizes.
9. Explain to students the assignment and why they are in different sized groups. (State populations were different; they had different number of delegates from each state.)
10. Tell students to turn in questions from PowerPoint and that tomorrow they will present their government that they created.

Closure: Teacher will ask students to write on a piece of paper why we needed a new government?

Instructional Materials/equipment:
1. Creating a Government worksheet
2. Computer
3. PowerPoint
4. PowerPoint questions

Assessment Procedures:
1. Teacher will grade PowerPoint questions.
2. Teacher will grade Creating a Government worksheet

An Examination of the Incorporation of Literacy Strategies as an Essential Element

in Middle School Instruction

Christopher Reeves

Education 590, Spring 2009

The University of Tennessee at Chattanooga

Introduction to the Problem

Reading and writing are keystones to survival of everyday life. Literacy strategies are an important element within modern classrooms, and prepare students to be productive and well-learned for the future. "Strategies help proficient readers understand better what they read" (p. 2), suggest Avezedo and Cromley (2006). Too many students are struggling to grasp what is being taught in classrooms, regardless of the subject, because they are not reading on their current grade level. Corboy and Mangieri (1984) imply that students in secondary schools are reading way below grade level expectations. If students are not reading at proficient levels in secondary schools, middle schools are not appropriately preparing students for reading and writing, especially for secondary schools. It is important for teachers to help alleviate this situation through melding literacy strategies and lesson plans. While it may be a struggle to get students up to par with their reading skills, students can still become sufficient learners, when presented with the appropriate skills necessary. Resnick (1990) argues there are three forms of literacy practices in which people participate with written texts. As educators, teachers try to educate students with the skills necessary to successfully engage with texts in the written realm of everyday life. Resnick (1990) describes the three forms of literacy as "the useful (using print to mediate practical activities); the informational (using print to convey or acquire knowledge); the pleasurable (reading for the fun of it)" (p. 172). Students are expected to learn the skills necessary for reading and writing in order to be competent in practical situations; to be lifelong learners; and to appreciate literature for entertainment value, through the guidance of teachers.

The term, literacy, automatically conjures images of a reading or language arts class. In reality, literacy encompasses all subject areas within the educational spectrum. Vincent (2003), who says the definition of literacy is continuously expanding, states, "the term is attached to a

proliferating body of conditions and activities" (p. 341). While literacy strategies are used in the language arts curriculum on a regular basis, math, science, and social studies teachers are faced with the problem of making sure students comprehend lessons being taught, too. One way of teaching comprehension is with literacy strategies. Literacy strategies are pliable between all subjects due to how well they correspond with both fiction and nonfiction texts. Students can be taught to comprehend texts through proper instructional techniques utilizing literacy strategies.

The purpose of this study is to examine the incorporation of literacy strategies into lesson plan instruction at a public middle school, and to determine if the strategies were an essential element to learning within the core subject areas of math, science, social studies, and language arts. Research such as this, could be beneficial in helping to motivate teachers to continue, or begin to implement, literacy strategies into classroom curriculum to better their students' comprehension of texts taught. It may also help teachers to become aware of new literacy strategies not currently used. The study was based upon three questions about the incorporation of literacy strategies into lesson plans:

1. Do teachers in the core subjects of math, science, social studies, and language arts regularly implement literacy strategies into their lesson plans?

2. Do certain grade levels and subject areas implement literacy strategies more often than do others do?

3. Which literacy strategies are used more often than others?

Review of Literature

An article by Vincent (2003) argues that literacy has morphed into to many practices; suggestions indicate that new attention needs to be directed toward the implementation and receiving of literacy strategies, and how they are adapted to the configuration of home,

classroom, and state; information is revealed to analyze contemporary literacy usage, and encourages future examination on the core areas of reading and writing.

A research study by Avezedo and Cromley (2006) discusses how competent readers participate in a variety of cognitive and metacognitive activities in reading comprehension. Avezedo and Cromley state that such activities "include summarizing or paraphrasing what was read, generating questions and answering them, activating relevant prior knowledge, monitoring their own level of understanding and then re-reading…when text was not understood" (p. 2). According to Avezedo and Cromley, such activities are labeled comprehensive strategies, and include cognitive and metacognitive strategies. Avezedo and Cromley (2006) define cognitive strategies as ones that use activities, such as searching and summarizing; metacognitive strategies are defined as ones that revolve around the "feeling of knowing" (p. 2).

Barbe-Clevett, Hanley, and Sullivan (2002) investigated metacognitive reflection to improve reading comprehension, after collecting data through assessments on the classroom, district, and state level that indicated that students lacked proficiency in comprehending texts. The investigation also indicated that reflection on individual thinking processes could not be recalled by the students after texts were read. It also revealed that motivation to read, and conscious participation in reading actions, were lacking. The information provided an opportunity for reflective processes to be incorporated through the implementation of activities, or strategies, to improve active thinking, visual thinking, and metacognitive reflection. Post evaluation of data revealed that student ability to recall information in the reading process increased, as did motivational and emotional involvement.

McCrudden, Perkins, and Putney (2005) examine the implementation of reading strategy instruction as it relates to self-efficacy, comprehension, and interest. Previous research, as

indicated by the researchers, shows that reading strategies could improve the comprehension of reading, but little research has been evaluated to show a connection in strategy implementation and self-efficacy and interest by utilizing reading strategies. Information revealed by the researchers indicates that the implementation of reading strategies into instruction and curriculum influences the motivation of students.

Lacina and Watson (2008) note that the importance on literacy, while teaching in a specific curriculum, requires an intricate collection of strategies, and, simultaneously, places complicated requirements on instructors who teach middle school students. Teachers must acknowledge the physical and developmental changes of middle school students, to be adequate instructors, according to the authors. Both authors discuss how some individuals view teachers in the content areas as teachers of reading, but they argue there is a misunderstanding because literacy strategies are not compatible with many teachers in certain content areas. The writers discuss how "every teacher should be an enabler, one who enables students to think and learn through text" (p. 160).

<center>Data Collection and Results</center>

The intention of this research project is to examine the incorporation of literacy strategies into lesson plan instruction at a public middle school, located in Chattanooga, Tennessee. The research will investigate sixth-, seventh-, and eighth-grade levels of the core content areas of math, science, social studies, and language arts. Teachers were given a voluntary and anonymous questionnaire to answer (see Appendix A). The survey consisted of 32 questions.

The survey was distributed to 28, sixth-, seventh-, and eighth-grade teachers in core subject areas, which include math, science, social studies, and language arts. The survey will evaluate how often literacy strategies are used on a weekly basis, which literacy strategies are

more popular than others, and the opinions of teachers who feel literacy strategies are essential, or nonessential, to curriculum instruction.

Once the initial survey results have been analyzed, results will be compared to see if a particular grade level incorporates literacy strategies more often. Survey results will also be evaluated to see if a particular subject uses literacy strategies on a more regular basis than others.

The anonymous questionnaires, answered by the voluntary participants, were sealed in a manila envelope and placed in a collection box in the middle school's central office. Teachers were provided ample time, 1 week, to complete the survey. The largest commitment of time developed from the examination of survey data, which took approximately 1 week to fully analyze and interpret. Fourteen responses are discussed in narrative form; 15 responses are illustrated in table format. Three open-ended responses are presented in Appendix B.

A total of 16 out of 28 teachers (57 percent) responded to the survey; these responses are included in the results. The major areas of importance when examining the survey were grade level, subject taught, frequency of incorporation, professional development training of literacy strategies, and types of strategies used. This seems to be a reliable count upon which to base the study, due to 57 percent of teachers contributing.

The participants included 37.5 percent of teachers who taught on the sixth-grade level, 37.5 percent of teachers who taught on the seventh-grade level, and 25 percent of teachers who taught on the eighth-grade level. Of the respondents, 25 percent were math teachers, 18.75 percent were science teachers, 25 percent were social studies teachers, and 31.25 percent were language arts teachers.

The survey reveals the highest portions of teachers, 31.25 percent, have been teaching between 8 and 12 years. The survey also shows a low amount of teachers, 6.25 percent, have

been teaching between 13 and 20 years. New teachers, 12.5 percent, have been teaching 3 years or less. Only 25 percent of teachers have taught for 4 to 7 years. A final group of teachers, another 25 percent, have provided over 20 years of educational services.

Responses indicate that 93.75 percent of teachers implement literacy strategies into lesson plans, while only 6.25 percent do not incorporate literacy strategies into lesson plans. Apparently, literacy strategies are present within the classroom environment. Respondents indicate that 43.75 percent of instructors strongly agree that literacy strategies are important to teaching their curriculum, while 43.75 percent neither agree or disagree that literacy strategies are important to teaching their curriculum; the remaining 12.5 percent disagree that literacy strategies are important to teaching their curriculum. Responses also indicate 37.5 percent of teachers strongly agree that literacy strategies are an effective tool to increase student learning, 56.25 percent of teachers neither agree or disagree that literacy strategies are an effective tool to increase student learning, and 12.5 percent of teachers disagree that literacy strategies are an effective tool to increase student learning.

All teachers, have participated in a professional development workshop for literacy strategies. All teachers, report their school currently has a school-wide literacy program in use. Responses reveal 31.25 percent of teacher strongly agree that the school-wide literacy program has helped student achievement; the majority of teachers, 56.25 percent, neither agree or disagree that the school-wide literacy programs has helped improve student achievement; and only 12.5 percent of teachers disagree that the school-wide literacy program has helped student achievement.

Most teachers, 62.5 percent, believe their peers use literacy strategies to teach their curriculum, while 37.5 percent of teachers neither agree or disagree that their peers use literacy

strategies. Half of the respondents, 50 percent, show they strongly agree that most of their peers are properly instructed on how to use literacy strategies within their curriculum; 37.5 percent of respondents neither agree or disagree that most of their peers are properly instructed how to use literacy strategies within their curriculum, while 12.5 percent of respondents disagree. Responses also indicate a minority of teachers, 12.5 percent, strongly agree that literacy strategies should only be used for language arts curriculum, 31.25 percent of teachers neither agree or disagree, and the majority of teachers, 56.25 percent, disagree that literacy strategies should only be used for language arts curriculum.

Responses indicate that the overall class usage of literacy strategies (see Figure 1) vary from grade level to grade level. The majority of the sixth-grade teachers, 67 percent, use literacy strategies in all their classes, while the remaining 33 percent of teachers use literacy strategies in some of their classes. On the seventh-grade level, the overall class usage of literacy strategies is evenly distributed. Equally, 50 percent of seventh-grade teachers use literacy strategies in all their classes, and 50 percent of seventh-grade teachers use literacy strategies in some of their classes. The majority of eighth-grade level teachers, 50 percent, use literacy strategies in all their classes, while only 25 percent of eighth-grade teachers use literacy strategies in some of their classes; the remaining eighth-grade teachers, 25 percent, do not use any literacy strategies in their classes.

By examining the class usage even closer, the questionnaire uncovers the class usage of literacy strategies per subject area (see Figure 2) also varies. Literacy strategies were used by 50 percent of math teachers in all their classes, 25 percent of math teachers in some of their classes, and 25 percent of math teachers did not use literacy strategies in any of their classes. Literacy strategies were incorporated by 33 percent of science teachers in all their classes, along with 67

percent of science teachers in some of their classes. In social studies, 75 percent of instructors incorporated literacy strategies in all of their classes, while only 25 percent of social studies instructors incorporated literacy strategies into some of their classes. For language arts, 60 percent of teachers used literacy strategies in all of their classes and the remaining language arts teachers, 40 percent, used literacy strategies in some of their classes.

According to the respondents, on an overall weekly basis (see Figure 3), sixth-grade teachers, 33 percent, used literacy strategies once or less per week; 17 percent of educators used literacy strategies twice per week; 33 percent of educators used literacy strategies three time per week; 17 percent of educators used literacy strategies four or more times per week. On an overall weekly basis for the seventh-grade, 50 percent of teachers used literacy strategies once or less per week, 33 percent of teachers used literacy strategies twice per week, and 17 percent of teachers used literacy strategies four or more times per week. On the eighth-grade level, 75 percent of teachers used literacy strategies once or less per week, and 25 percent of instructors used literacy strategies three times per week.

Breaking the grade levels into subject area for the overall weekly usage of literacy strategies (see Figure 4) shows the following fifty percent of math educators incorporated literacy strategies once or less per week; 25 percent of educators incorporated literacy strategies twice per week, and 25 percent of educators incorporated literacy strategies three times per week. In science, a grand total of 100 percent of teachers incorporated literacy strategies once or less per week, For social studies, 50 percent of instructors incorporated literacy strategies once or less per week, 25 percent of instructors incorporated literacy strategies twice per week, and the remaining 25 percent incorporated literacy strategies four or more times per week. Finally, in language arts, 20 percent of teachers used literacy strategies once or less per week; 20 percent of

teachers used literacy strategies twice per week; and the majority of teachers, 40 percent, used literacy strategies three times per week; only 20 percent used literacy strategies four or more times per week.

The survey indicates the two most popular literacy strategies (see Figure 5) incorporated into lesson plans where Compare/Contrast, at 87.5 percent usage, and Brainstorming, with a reflective 87.5 percent usage. The least used literacy strategies incorporated by teachers of all grade levels and subject areas were the GIST strategy, at a large percentage of nonuse of 93.75, and Admit Slips, with another high percentage of nonuse of 81.25.

Open-ended question number 24 (see Appendix B) asked teachers to list any other literacy strategies they use that were not listed on the survey. The most popular literacy strategies listed were Think Alouds, Talk to the Text, and 25 Word Abstracts. Other literacy strategies named included PARS/RAN, Graphic Organizers, and CLOZE literacy strategies.

Open-ended question, number 31 (see Appendix B) questioned what are some of the biggest concerns, if any, teachers have experienced while teaching a lesson plan with literacy strategies. The responses seem to indicate teachers are concerned that students may not have enough background knowledge of literacy strategies from previous grades, students do not use the strategies independently to enhance their learning, and that students do not understand the reason for using literacy strategies. Other teacher comments indicated they wanted to make sure literacy strategies were being used properly, and that the strategies lead to increased understanding of what has been read. Some responses from teachers indicated literacy strategies were hard to use when teaching grammar and math.

Open-ended question number 32 (see Appendix B) asked what teacher would consider beneficial about teaching lesson plans with the incorporation of literacy strategies. Teachers'

responses reveal that incorporating literacy strategies may help increase student understanding,

relevancy, and greater knowledge of curriculum. Other teacher responses state that incorporating

literacy strategies may give teachers new and different ideas, and place more demand on the

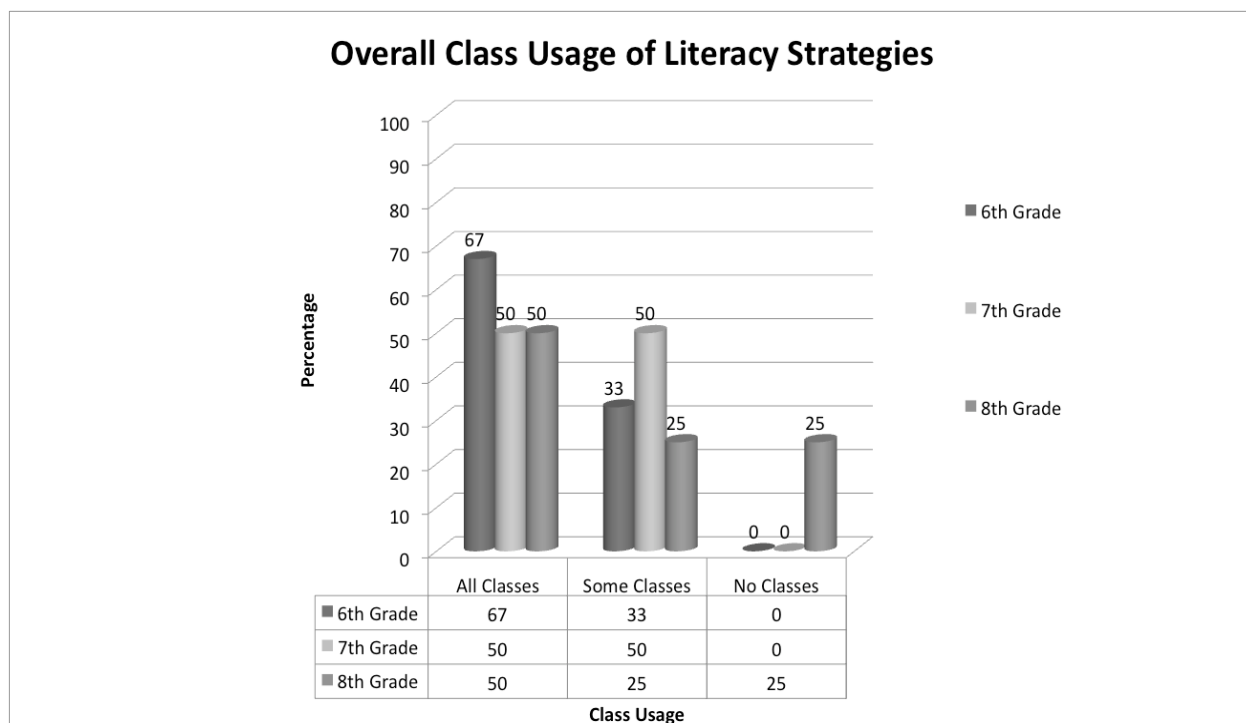teacher, and that benefits depend on the individual teacher using the strategies.

Figure 1. Teacher answers of overall class usage of literacy strategies. Faculty respondent total is 16.
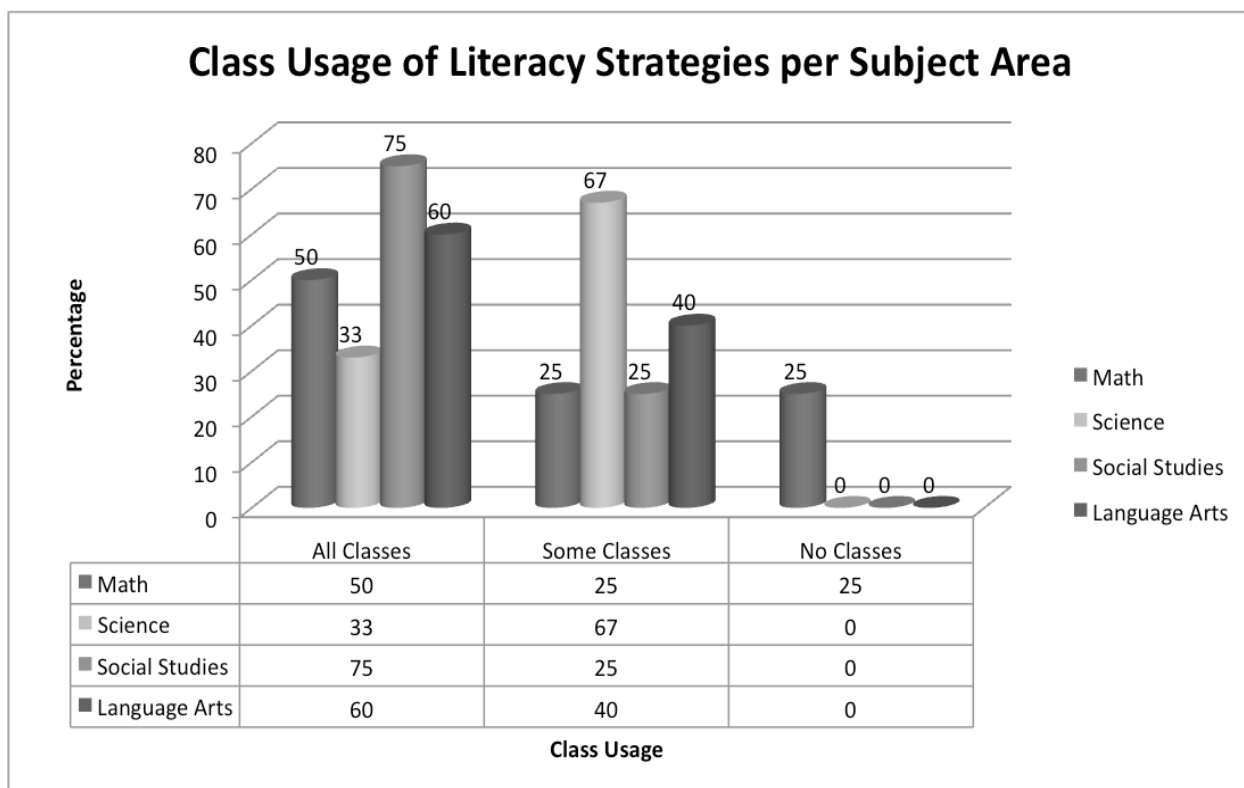
Class Usage of Literacy Strategies per Subject Area

Percentage (y-axis)

	All Classes	Some Classes	No Classes
Math	50	25	25
Science	33	67	0
Social Studies	75	25	0
Language Arts	60	40	0

Class Usage (x-axis)

Legend: Math, Science, Social Studies, Language Arts

Figure 2. Teacher answers on class usage of literacy strategies per subject area. Faculty respondent total is 16.

Overall Weekly Literacy Strategy Usage

Percentage (y-axis)

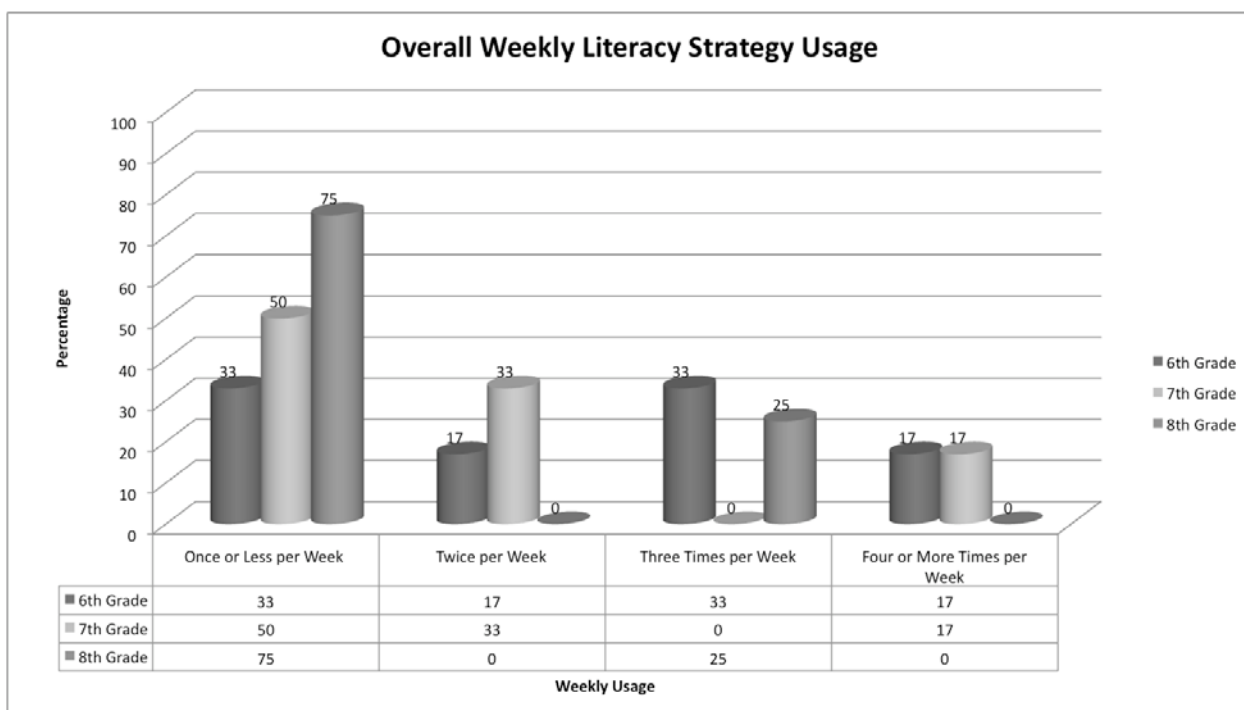|	Once or Less per Week	Twice per Week	Three Times per Week	Four or More Times per Week
6th Grade	33	17	33	17
7th Grade	50	33	0	17
8th Grade	75	0	25	0

Weekly Usage (x-axis)

Legend: 6th Grade, 7th Grade, 8th Grade

Figure 3. Teacher answers on overall weekly literacy strategy usage. Faculty respondent total is 16.

Weekly Literacy Strategy Usage per Subject Area

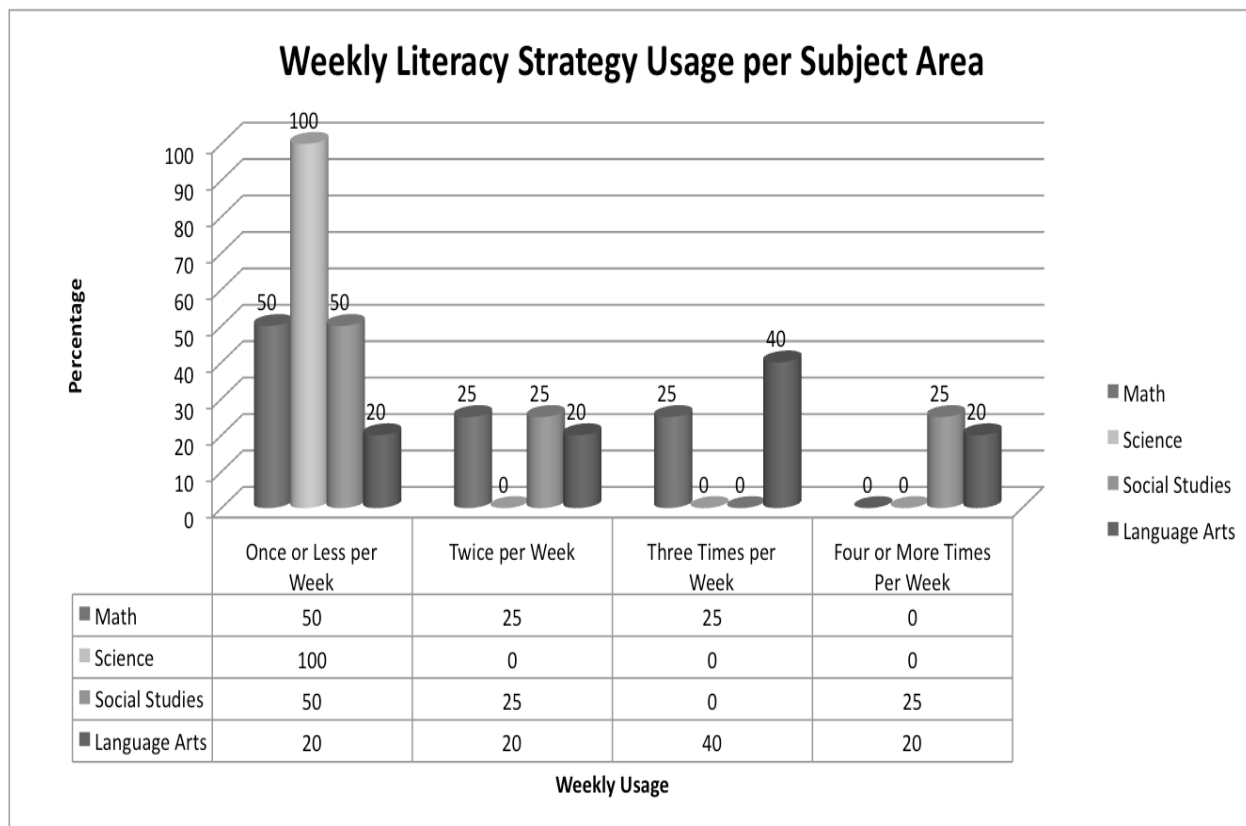|	Once or Less per Week	Twice per Week	Three Times per Week	Four or More Times Per Week
Math	50	25	25	0
Science	100	0	0	0
Social Studies	50	25	0	25
Language Arts	20	20	40	20

Figure 4. Teacher answers on weekly literacy strategy usage per subject area. Faculty respondent total is 16.
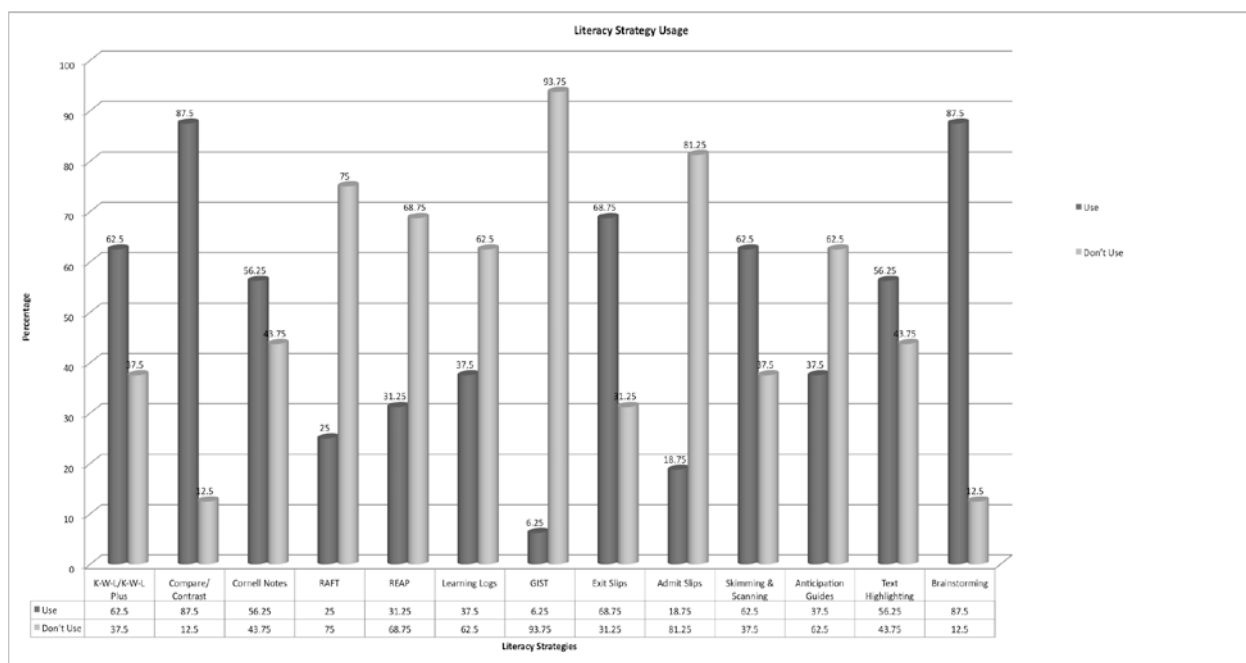
Figure 5. Teacher answers on specific literacy strategy usage. Faculty respondent total is 16.

Conclusions and Recommendations

In conclusion, the results show that teachers, at least 93.75 percent, from all middle school grade levels and subject areas, are incorporating literacy strategies into lesson plans. While the teachers are only using a limited number of strategies, Comparing/Contrasting and Brainstorming strategies are more popular than others. Students are being exposed to using them to help approach the texts they are reading within their classes. The sixth-grade level seems to use the majority of literacy strategies most often in all their classes. Both the seventh-and eighth-grade teachers use literacy strategies about 50 percent of the time in all their classes. The eighth grade was the only grade level that had teachers, 25 percent, who did not incorporate literacy strategies into any of their classes. The results uncover the fact that literacy strategies are incorporated heavily at the beginning of the middle school grades, in the sixth grade, remain steady for the seventh grade, and then drop off on the eighth-grade level. This is also proven through the weekly incorporation of literacy strategies, based on the grade levels. According to the overall subject area usage of literacy strategies, social studies teachers, surprisingly, used the most literacy strategies in their classes. Language arts teachers used the second largest amount of literacy strategies in all their classes, while science teachers used the least amount of literacy strategies within their lesson plans. The weekly frequencies of subject area usage of literacy strategies similarly mimics the overall subject area usage.

Based on the results of the survey, I believe teachers are incorporating literacy strategies into their lesson plans on a minimal level. All teachers indicated that they have been provided information on literacy strategies at professional development meetings, and that their school is currently on a school-wide literacy program, yet, it seems teachers are not using the strategies as much as they could be. I would recommend teachers use both vertical planning and horizontal

planning to gather new ideas about literacy strategies and how they could tie them into the lesson plans they are teaching. If all three grade levels of the middle school would vertically plan, then there would possibly not be a slow decline in literacy strategies, as the students move from lower grades to upper grades. If teachers would horizontally plan with peers on the same grade level, then usage of literacy strategies among all the subject areas would be uniform. I do understand that some subject areas have a more difficult time using literacy strategies, but, at the same time, all subjects have the basic commonality of reading textbooks, and the information therein. I feel that teachers struggling to incorporate literacy strategies into their lesson plans should ask for help from fellow teachers, and, possibly, from school administrators. There may be opportunities for further learning skills on how to use literacy strategies through better and updated professional development classes. I feel that, no matter what grade level or subject area, teachers should be striving to help improve the literacy of students through the incorporation of literacy strategies into daily and weekly lesson plans.

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Appendix A

FACULTY SURVEY
PLEASE RETURN COMPLETED SURVEY TO THE ENVELOPE LABELLED "REEVES'
CASE STUDY SURVEYS" LOCATED IN THE MAIN OFFICE. THANK YOU FOR YOUR
PARTICIPATION.

1. How long have you been teaching?
   a. 3 years or less
   b. 4—7 years
   c. 8—12 years
   d. 13—20 years
   e. More than 20 years

2. What grade level do you teach?
   a. 6th
   b. 7th
   c. 8th

3. What subject do you teach?
   a. Math
   b. Social Studies
   c. Science
   d. Language Arts/Reading
   e. Other (Explain)_____

4. How you would describe the teaching environment at your school?
   a. Inner city
   b. Rural
   c. Suburb

5. On average, how many students do you have in each class?
   a. 20 or less
   b. 20—30 students
   c. 30—40 students
   d. More than 40

6. Do you use literacy strategies to help teach your curriculum?
   a. Yes
   b. No

7. You currently use literacy strategies in _____.
   a. All of your classes
   b. Some of your classes
   c. None of your classes

8. How often do you incorporate literacy strategies into your unit/lesson plans?
   a. Less than once per week
   b. Twice per week

c. Three times per week
d. Four or more times per week

9. Do you agree that literacy strategies are important to teaching your curriculum?
    a. Strongly agree
    b. Neither agree or disagree
    c. Disagree

10. Do you agree that literacy strategies are an effective tool to increase your students' learning?
    a. Strongly agree
    b. Neither agree or disagree
    c. Disagree

Please mark the literacy strategies you use to teach your curriculum.
11. K-W-L, K-W-L Plus, etc.
    a. Use
    b. Don't use

12. Compare/Contrast
    a. Use
    b. Don't use

13. Cornell Notes
    a. Use
    b. Don't use

14. Raft (Role, Audience, Format, Topic)
    a. Use
    b. Don't use

15. REAP (Read, Encode, Annotate, Ponder)
    a. Use
    b. Don't use

16. Learning Logs
    a. Use
    b. Don't use

17. GIST (Generating Interactions Between Schemata and Texts)
    a. Use
    b. Don't use

18. Exit Slips
    a. Use
    b. Don't use

19. Admit Slips

    a. Use
    b. Don't use

20. Skimming & Scanning
    a. Use
    b. Don't use

21. Anticipation Guides
    a. Use
    b. Don't use

22. Text Highlighting
    a. Use
    b. Don't use

23. Brainstorming
    a. Use
    b. Don't use

24. Please list any other literacy strategies you use that are not listed.

25. Do you agree most of your peers use literacy strategies to teach their curriculum?
    a. Strongly agree
    b. Neither agree or disagree
    c. Disagree

26. Have you participated in a professional development workshop for literacy strategies?
    a. Yes
    b. No

27. Does your school currently have a school wide literacy program?
    a. Yes
    b. No

28. If yes, do you agree the school wide literacy program has helped student achievement?
    a. Strongly agree
    b. Neither agree or disagree
    c. Disagree

29. Do you agree most of your peers are properly instructed how to incorporate/use literacy strategies within their curriculum?
    a. Strongly agree
    b. Neither agree or disagree
    c. Disagree

30. Do you agree literacy strategies should only be used for the Language Arts curriculum?
    a. Strongly agree
    b. Neither agree or disagree
    c. Disagree

31. What are the some of the biggest concerns (if any) you have experienced while teaching a unit/lesson plan with literacy strategies?

32. What would you consider beneficial about teaching unit/lesson plans with the incorporation of literacy strategies?

Appendix B

Question 24

Please list any other literacy strategies you use that are not listed.

1. Think Alouds (2 responses)
2. Talk to the Text (3 responses)
3. 25 Word Abstracts (2 responses)
4. PARS/RAN
5. CLOZE
6. Graphic organizers

Question 31

What are some of the biggest concerns (if any) you have experienced while teaching a lesson plan with literacy strategies?

1. Students don't have enough background in previous grades.
2. Reading and text use is [minimal] in Math.
3. Making sure I am using/teaching it correctly.
4. I don't believe literacy strategies should be used just for the sake of using. They need to fit the lesson well, and they must enhance the lesson for a greater learning experience.
5. Different reading levels K-12 (students span this range in classroom). Students often don't apply them unless told to or reminded, that is, they don't understand that the strategy can help them understand what they're reading.
6. I want to be sure the literacy strategy leads to increased understanding of what has been read.
7. Getting the students to understand the strategies.

Question 32

What would you consider beneficial about teaching lesson plans with the incorporation of literacy strategies?

1. Enabling teachers to use new and different ideas.
2. Helps our very low readers understand the topics. Science books are written on a high school level. Most kids read on an elementary level.
3. Depends on the teacher.
4. In Social Studies, it helps the students to understand the reading better.
5. Better and deeper understanding of curriculum.
6. Modeling good strategies helps students from good habits/skills.
7. They learn in small parts, to understand before moving on—small steps.
8. It's what they'll do in the real world of a career. It makes learning subject matter easier. It will help if they go on to graduate from high school or go to college. It promotes deep thinking.
9. It helps students learn more effectively.
10. Reading any text, it helps!

The Importance of Process: Using Socratic Seminar in the Classroom

Ginger Thomas

Education 590, Spring 2009

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA00004149)

has approved this research project 09-079.

Introduction to the Problem

The purpose of this research is to incorporate the use of the Socratic Seminar method into a diverse, ninth grade English classroom in order to promote literacy, higher order thinking skills, and "enlarged understanding of ideas of values" (Adler, 1982, p. 8). This study focuses on developing the skills students need to navigate the procedure used in Socratic Seminar, which may also be referred to, simply, as seminar. Students and teachers must follow a specific procedure before, during, and after the seminar. Once students and teacher learn the procedure, increasingly challenging texts and concepts can be introduced and developed.

Students, typically, speak in different ways in the classroom. The most traditional strategy is teacher-centered. The teacher asks a question, and then calls on one student to answer. Information flows from teacher to student. Some classes may have more informal discussions in which some students have the opportunity to respond to one another. Socratic seminar differs from dialogic discussion in the way that it is specifically structured. In this student-centered and student-driven activity, students interact with each other, instead of giving the "correct" answer to the teacher, as they are trained to do in a traditional classroom setting. Students learn through social interactions with each other, and seminar is one way to facilitate this kind of interactive growth. They not only learn social and communication skills, but they also practice many, if not all, of the cognitive skills needed to be good readers of all kinds of texts (Daniels & Zemelman, 2004).

Students build on literacy skills, including reading, writing, and speaking on a higher level, through seminar participation. These skills are of increasing importance in the classroom due to Tennessee's new, and more challenging, standards. Tennessee standards will be changing in the following year in order to be more aligned nationally. The standards for English I include the

following categories: Language, Communication, Writing, Research, Logic, Informational Text, Media and Literature (Tennessee Department of Education, 2009). Each of these strands can be addressed through various seminar methods, which makes it a valid and useful strategy. The standards have grown in number of strands, as well as in rigor. For example, rather than identifying an allusion, students must now "identify classical, historical and literary illusions in context" (Tennessee Department of Education, 2009, p. 20). This example of a rigorous state performance indicator (SPI) can be addressed during seminar at a higher level on Bloom's taxonomy. It has been proven a useful method through research. This study addresses the first step in implementing Socratic Seminar into the classroom: the procedure.

Review of Literature

Socratic seminar has a foundation built upon long-held and supported educational theories. Socrates used what could be called an "instruction through questioning methodology" which encourages students to learn how to think, rather than what to think, so that they can function as good citizens, and have a good life, once they are out of school (Polite & Adams, 1996, p. 3). The Socratic seminar is a way to incorporate all literacy skills: reading, speaking, listening and writing (2008). When used synergistically these parts come together in a way for students that can make curriculum "relevant and memorable" (Roberts & Billings, 2006, p. 34). Teachers of all subject areas may say that their students are, or are not, literate. Reading is more than decoding words. The biggest part of reading that is lacking is the thinking piece. Students must learn to think, which is a larger task for teachers than is reading. Roberts and Billingsley define thinking as being able to effectively manipulate and explain systems, with the systems being sets of interrelated ideas (Roberts & Billings, 2006, p. 34). Seminar not only helps meet state standards, but also helps students read and think better, on their own.

Vygotsky's educational theories support the use of Socratic Seminar in the classroom. Children are social learners who learn from both teachers and other students. Children learn about how to behave in a way that is culturally acceptable from adults who guide them through adult-like situations, as well as through formal, traditional teaching (McDevitt & Ormrod, 2004). McDevitt and Ormod adapt Vygotsky's teachings to a modern classroom in what they call a "mediated learning experience." An adult or teacher introduces a topic and helps the child label the parts, draw conclusions, and understand the topic through "co-constructing" meaning (McDevitt & Ormrod, 2004, p. 169). The teacher does not give the topic and tell the student exactly what they need to know, but, rather, scaffolds the skills the student needs. By modeling the thinking and problem-solving processes, the teacher is able to slowly remove the scaffolding so that students gain increased skill and confidence to use the skill on their own, and apply their knowledge to topics outside of the classroom, and into adult life. As children become proficient in adult-like activities, they are more likely to use those skills later in life (McDevitt & Ormrod, 2004, p. 171). Vygotsky's research shows that children learn from interactions with each other, as well. In conjunction with scaffolding, children can be given tasks, that are within their zone of proximal development, to accomplish alone. Then children can be placed into a group to solve more complex problems. The child who functions as the "teacher" or more advanced student benefits from working with other students, just as much as the students who learn from him or her (McDevitt & Ormrod, 2004, p. 171). There are several ways to incorporate Vygotsky's research into the classroom. Students should be engaged in authentic, real-world activities, encouraged to use adult-like ways of thinking about problems, and given chances to practice these skills individually and in groups (McDevitt & Ormrod, 2004). All of these practices are met by using Socratic Seminar.

Several Chattanooga schools use Socratic Seminar school-wide as part of regular instruction. One school was documented in a study by Polite and Adams (1996) that observed seminars in the classroom and gathered information from interviews with teachers and students. The chief goals listed for using Socratic Seminar in this school are to help students "think critically, resolve conflict, and clarify and articulate values" (Polite & Adams, 1996, p. 3). The researchers, overall findings note that students showed increased cognitive and social functioning during seminars. Eighty percent of students showed conflict resolution skills, and two-thirds of those demonstrated that they knew "elaborate resolution skills" (Polite & Adams, 1996, p. 4). About half of the students preferred the seminar environment to the regular class environment. The half that did not prefer seminar did not like that it was so different from regular classroom social structures that it and lacked authority figures (Polite & Adams, 1996, p. 4). Students' favorite seminars were those based on text they could personally relate, and one-third of the students responded negatively to seminars they considered "weird" (Polite & Adams, 1996, p. 4). The teachers who responded were satisfied, overall, with using Socratic Seminars; the main reason was that it helped to build higher-order thinking skills. Those who didn't like using seminar, overall, said they failed to see how it was different from what they were already doing in class (Polite & Adams, 1996). Through understanding the procedure of Socratic Seminar, the students who are uncomfortable with the different classroom environment, and those teachers who don't quite understand it, may become more comfortable and successful at using this strategy.

There are immeasurable benefits of Socratic Seminar; however, Socratic Seminar can be used to improve standardized test scores. According to Roberts and Billings, at Asheville Middle School, where students school-wide participate in seminars, end-of-grade tests improved in both

reading and mathematics after 1 year of seminar implementation (Roberts & Billings, 2006). All three grades showed markedly-increased scores in reading. One significant finding was that African-American students showed remarkable increase in achievement, thus closing the gap between African-American and Caucasian students. Simultaneously, the top students continued to increase their scores (Roberts & Billings, 2006, p. 38).

The Socratic Seminar is a not, simply, sitting and chatting about a story, as students may misleadingly define it. Dialogic discussion refers to the traditional, student-centered classroom in which a question is asked and a specific answer is expected; however, seminar requires that the teacher acts as a moderator who prepares open-ended, challenging questions in which the students interact with each other. The teacher-moderator listens, and keeps the seminar on track, without influencing or swaying student opinions. The teacher simultaneously records the path of conversation in order to direct, as well as assess performance. The teacher can employ strategies, such as looking down at the paper and not responding, in order to encourage students to talk to others, rather than to her. Each person who interprets a text can, and will, form a unique perception of the text, based upon the world view. This unique response is considered valid. When the teacher is the facilitator, student interaction becomes egalitarian. These ideas encourage students to work together in order to learn from each other, and, also, to construct new ideas together (Roberts & Billings, 2006, p. 33). The teacher's focus alternates from content to process activities.

According to *The Paideia Seminar Sampler* (The National Paideia Center, 2002), there are essential terms and instructions that go into developing a successful seminar. The text is the document that is the focus of the seminar. According to Adler, a supporter of Socratic Seminar in the classroom, the text can be a poem, short story, or piece of art. The text should be reinforcing

standards being met in the classroom. The piece should be appropriate to the class, in that it is challenging and complex in content, as well as possessing a degree of ambiguity. The text must contain a collection of ideas, concepts, and values. These ideas, concepts, and values are essentially themes that help the facilitator develop a plan that can help to increase student understanding of the text, and to personalize and challenge it during the final steps of the seminar. For example, some values might be justice, law, or responsibility. Any reading material used in class should be authentic and interesting. As students become more confident in their part of the process and norms of the seminar, their responses to the teacher, to prompts, and to each other become longer and more in depth. Students are able to build upon, and connect to each other's, remarks (Roberts & Billings, 2008).

The following information is from *The Paideia Seminar Sampler*, written by The National Paideia Center (2001), to help teachers with Socratic Seminar. Defined are some of the basic terminology used, and steps performed, in conjunction with Socratic Seminar. The seminar, itself, can be divided into two parts: process and content. The content activities are divided into pre- and post-seminar. The pre-seminar activities are used to activate prior knowledge, identify unknown vocabulary words, and establish context. The activity can be chosen by the teacher, and could be any number of activities that are normally used in the classroom as pre-reading activities. The post-seminar content activities are often writing assignments, or other activities that give students a chance to reflect on, and extend, what they have talked about during the seminar.

The process activities focus on what the students are actually doing. During the pre-seminar process activities, the teacher reviews the reasons for seminar, as well as the acceptable behaviors. Students may be asked to set behavioral goals for themselves, such as speak at least

three times. The group may set a goal. Students can reflect on past seminars and goals. The teacher may describe how students will be assessed. Students can be assessed based on the process, their final product, writing assignment, and self-assessment (Roberts & Billings, 2008). The post-seminar process activity takes places immediately after the seminar content is completed. Students reflect on how well they did, in terms of their personal goals, as well as how their peers participated, and how the group, as a whole, met its goals. Students may reflect on their strengths and weaknesses, and think about how they can improve for the next seminar (The National Paideia Center, 2001).

There is an order that is followed when asking questions during the seminar: opening, core, and closing. The opening questions are asked at the official start of the seminar, after the pre-content activities have taken place. These questions, like all seminar questions, should be open-ended, in order to elicit multiple responses. Opening questions can be asked in round-robin style, in which every participant answers. The teacher may ask, "Why?," after each student has responded. Students should be encouraged to refer to the text when answering, in order to support their answer. Core questions are the body of the seminar. They make up the biggest portion of questions. Core questions continue to be open-ended, and students must continue to refer to the text to continue "honing their analytical skills" (The National Paideia Center, 2001). These questions may get narrower, to bring focus to the core values and ideas. The seminar ends with closing questions that extend the text and make it more personal. Students can respond to closing questions with connections and personal relations to the text. The text becomes increasingly relevant to their lives, and has been analyzed and extended in ways that are not obvious with a quick reading of the text.

Method

Participants

The participants of this study were 48 students from a local suburban/urban high school English I class. All participants were ninth graders. The results include data from seven students with IEPs and two as ESL students. Figure 1 shows the number of students from each class that were present for each seminar.
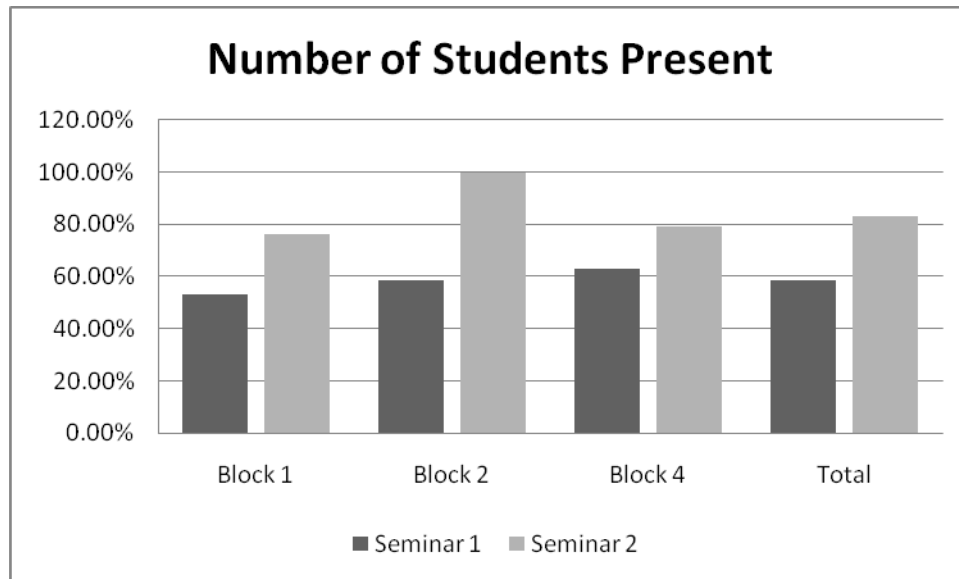

Figure 1. Student attendance.

Procedure

Many students have participated in discussion in class, but none reported to have taken part in Socratic Seminars. Students were given a survey that asked them to identify some of their conceptions about the rules of talking in class, and their comfort level of talking in formal and informal settings. This survey was used to activate prior knowledge in order to prepare students for discussion about Socratic Seminar procedures. See Appendix A for list of questions, adapted from research by Roberts and Billings (2006).

Students are encouraged to use one another's names in the seminar process. Throughout the semester, students did various group activities, but still didn't know some students' names.

Students were instructed to make nameplates out of construction paper to place in front of themselves, once they were in the circle for seminar, so students would become accustomed to saying things like "I agree with Johnny" or "I disagree with Susie."

During seminar, student responses were documented by the facilitator. When students respond to the facilitator's questions, a line is drawn from the student's position to the center. When students respond to each other, a line is drawn from one student, through the center, and to the other student.

After each seminar, students reflected in conversation, and on rubrics, about their own participation and goals (The National Paideia Center, 2001, p. 96). Students were assigned writing assignments to extend their thoughts and connect the text with more personal ideas, after each seminar. The texts used were Polonius's speech from *Hamlet*, by William Shakespeare, and *The Use of Force*, by William Carlos Williams. These two texts, and their accompanying seminar questions, were chosen from *The Paideia Seminar Sampler*, since the focus was on procedure, which included the facilitator learning the process, as well as the students (The National Paideia Center, 2001).

It takes time and patience to learn the procedure of the Socratic Seminar, for both teacher and student; however, the resulting content and skills that are produced make the effort worthwhile. After the second seminar, during the post-seminar process activity, students made comments about how they felt that the second seminar went more smoothly than the first seminar. They were able to differentiate between the content and process, because they thought the content of the second seminar was boring in comparison to the first. Students were much more likely to use each other's names and to say formal statements like, "I agree/disagree." Student responses decreased, overall, from Seminar One to Seminar Two, except in Block 2,

which had more students present for Seminar Two. See Figure 2 for number of individual

responses. These responses do not include the round-robin question that was answered by every

student during the opening question. The length of time of the seminars decreased, as well,

which may be due to several factors. See Figure 3 for the length of the seminars. Students needed

less instruction because procedures were no longer unfamiliar. Overall, they made comments

about being more interested in *The Use of Force.* The Shakespearean speech was straightforward

to most of them, once they figured out the language, leaving little to discuss. Their reactions

encourage me to use more complex pieces of literature from which they have to work together to

construct meaning, as well as selecting topics that are relevant and engaging to them.
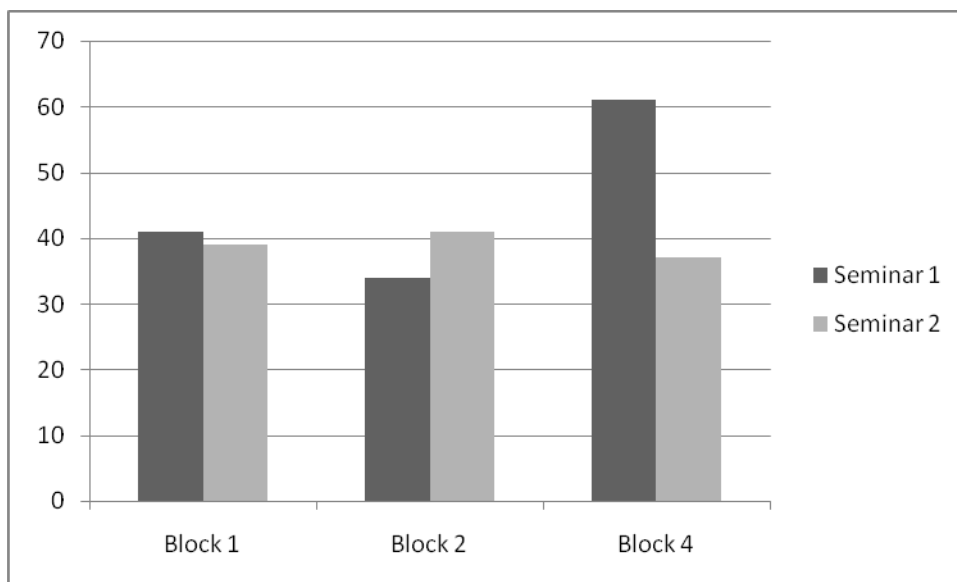

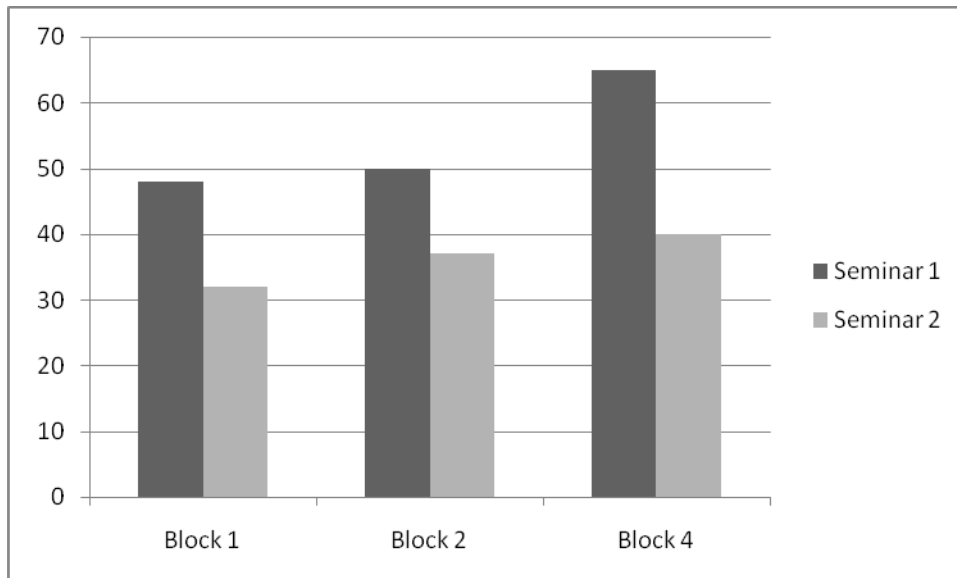*Figure 2*. Number of responses in Seminar One compared to Seminar Two.

Figure 3. Length of Seminar One compared to Seminar Two (in minutes).

Conclusions and Recommendations

Conclusions

I was pleasantly surprised with this method, despite the fact that the Seminar Two was shorter in length and number of responses. It was uncomfortable for the students and for me to sit in silence, if no one was responding. However, when they did talk, they stayed on task much more during Seminar Two. Several students who struggle with reading and writing did well at interpreting the text and articulating their responses verbally. All present went on to complete the extension activities. Most students later requested to do more seminars, or reference the text, while we were discussing other pieces of literature in class.

There are some potential problems with this method of instruction. Many schools deal with student attendance, and seminars are impossible to duplicate or do at home. See Figure 1 for attendance in each block for both seminars. One way to combat the issue of attendance is to stress the importance of students taking ownership, and how important it is to the whole that each one attends. The seminars for Block 1 were different because two of the students who were

very outspoken in the first seminar were absent for the second seminar. The teacher may also have prepared an alternative assignment, such as an essay response or a short quiz, so that students can be held responsible for the content and literary devices within the text. These problems are nothing different from what teachers deal with when using any strategy, and for which can be compensated.

<p style="text-align:center">*Recommendations*</p>

From the results of this study, the continued use of Socratic Seminar is recommended. In order to use the Socratic Seminar method regularly, it should be scheduled into the syllabus in order to have seminar roughly every other week. Seminars should begin early in the school year in order to familiarize students with the material and process. The results of this study support teachers needing instruction in successfully using Socratic Seminar, rather than relying only on trial and error for the best benefits for teacher and students. There are many resources readily available. There are training sessions available through The National Paideia Center, as well as more informal sessions by others already trained. There are pre-made seminars available from The National Paideia Center, and other online resources, which are helpful for teachers trying to learn the procedures themselves. Learning to facilitate, as well as ways to fairly and accurately assess seminars or make rubrics for seminars, would be a useful professional development activity for teachers in training, as well as for veteran teachers. Teachers could observe Socratic Seminars at other schools, or in classrooms that regularly hold them.

There is grant money available for training opportunities. Teachers can begin using this strategy with resources already available in their classrooms or library. Technology is not absolutely necessary for this strategy, which makes it ideal for teachers who lack access;

however, one may find resources on the Web, or make better grading rubric and assessment tools through the use of technology.

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Appendix A - Student Questionnaire

Answer the following questions honestly and thoroughly. Do not put your name on this paper. Your answers will be kept anonymous and confidential. Your answers to these questions will have no effect on your grade.

1. What three words would you use to describe yourself in class?

2. My interpretation of the rules for talking in this class is that…

3. How comfortable are you with talking aloud in class discussions in this class? (On a scale from 1-5, with 1 being the least and 5 being the most)

4. How comfortable are you with talking aloud in seminars in this class? (On a scale from 1-5, with 1 being the least and 5 being the most)

5. How comfortable are you with talking aloud outside of classrooms, in the hallway, for example? (On a scale from 1-5, with 1 being the least and 5 being the most)

6. What are the rules for talking in this classroom?

7. What do you think about seminars?

Test Anxiety

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Introduction to the Problem

Today's high-stakes testing is becoming more and more important to school administrators, teachers, parents, and, even, students. Some tests can determine such things in a school as the amount of funding that is received each year, and, for some schools (such as new charter schools or schools on notice year after year), the test scores that are achieved may actually determine whether the school will continue to open their doors the next year. For the individual teacher, high-stakes testing can be a direct reflection on whether they taught the material that was expected of them in a manner that was transferred to their students. And, for the individual student, high-stakes testing can sometimes mean the difference between being held back a year (in certain cases). As the importance of high-stakes testing increases, many schools have began to start students, at a very young age, to prepare for test taking, in general. Some schools in Hamilton County have pre-TCAP testing in second grade to prepare the children, and other schools have begun to prepare first-grade children.

With testing becoming more common and the importance of testing becoming more pronounced, school administrators are beginning to take notice of test anxiety in their student populations. Test anxiety has been linked to many different problems, including lack of focus, poor testing abilities, and behavior problems. Researchers (Sena, Lowe & Lee, 2007) now believe that anxiety also has a direct effect on a person's memory—which can certainly have a direct impact on a student's performance on a test. Even very young students are now prone to test anxiety, which can greatly reduce student ability to score as high as they are capable on a given test. Knowing that test anxiety can actually inhibit a student from being able to take a test to the best of their ability brings this researcher to the actual area of focus statement: The purpose of this study is to determine the effectiveness of differing techniques, prior to test taking,

to improve the overall stress that students encounter, and to determine the effectiveness of these techniques in overall attitudes about test anxiety.

Research Questions

- Are techniques to reduce test anxiety effective in lowering anxiety?

- Does literacy (DIBELS percentile score) have an effect on overall test anxiety?

Literature Review

Test Anxiety Prevalence and Scope

Test anxiety has been linked to many different problems, including lack of focus, poor testing abilities, and behavior problems. Researchers now believe that anxiety also has a direct effect on a person's memory, which can greatly impact a person's performance on a test (Sena et al., 2007). With today's high-stakes testing, even very young students are exposed to testing situations in which their anxiety can increase to a level which may impair their ability to perform at the level to which a student may be capable. According to Sena et al. (2007), in a 2007 study by Methia, it was found that more than 33% of school-aged children and adolescents experience some test anxiety. Several research studies have also found that there are significant differences in anxiety levels among differing age groups, as well as differing sexes (Sena et al., 2007). According to Sena et al. (2007), in the 1988 research conducted by Hembree, it was reported that gender differences were found cross-culturally in 12 different countries among school-aged children. It was found that girls scored statistically significantly higher than boys on the Test-Anxiety Inventory (TAI). In a similar research study, conducted by Moore (2006), among school-aged children in the United States, the researcher found that females "consistently reported higher levels of anxiety than males" (¶ 1).

According to Research by Sena et al. (2007), there is an actual physiological series of events that occurs when a person is under stress—specifically stress that is caused by a particular event such as testing. The researchers reported that, when a person is under stress, the heart beats faster, and the sweat glands produce more perspiration. At the same time, a person might have feelings of inadequacy and feel more anxiety towards test taking—especially following a previous, negative experience with a test (Sena et al., 2007). Trait anxiety, as explained by researchers Sena et al. (2007), is a stable personality characteristic; it is explained that test anxiety is a very situation-specific form of trait anxiety. The researchers explain that "a test-anxious individual is more prone to react with excessive anxiety (e.g., worry, negative thoughts, tension, and physiological arousal) across evaluative situations (i.e., trait anxiety) and the test-anxious individual experiences more intense levels of state anxiety in each evaluative situation" (Sena et al., 2007, p. 2).

In a research study examining the effects of anxiety on the differing subsystems of working memory (Lee, 1999), the researcher found that there is a significant effect on task performance when there is a time-constraint with test questions. Most high-stakes tests require that the test taker be timed in different subsections of the test—which greatly increases anxiety and affects performance in students with high test anxiety. Even when students appear to know the answer to a question, high levels of anxiety appear to impair a person's ability to answer correctly when they know that time is a problem. Lee (1999) also reported that test anxiety affects performance on verbal tasks that require the usage of working memory, and anxiety also greatly affects performance on visual-spatial tasks. In another study regarding memory, researchers Sena et al. (2007) found that "the high levels of state anxiety experienced by the test anxious individual in an evaluative situation activates worry conditions stored in one's memory,

and these worry conditions interfere with the test-anxious individual's performance on a test" (p.

2).

After examining the physiological effects that test anxiety has on a person's body, it is important to examine which populations of students may be at higher risk for experiencing test-anxiety. As stated previously, research indicates that there is a significantly higher instance of females with test anxiety, as well as more anxiety in different age groups, as well. Aside from demographics, another group of students who are affected by high levels of test anxiety are students with learning disabilities. Many students with learning disabilities (depending on the degree of severity) participate in regular test taking, as well as high-stakes testing. According to a student's Individual Educational Plan (IEP), students with identified learning disabilities may have it written into their IEP to be given additional time or other interventions when participating in test taking. However, if no additional interventions are specifically written into a student's IEP, students with learning disabilities are not given additional time or instructions when participating in test taking. This affects many students.

In a study by Swanson and Howell (1996), 82 students with (learning disabilities), of differing age groups, were evaluated in order to examine the relationship between test anxiety and academic achievement. The researchers tested many different aspects such as academic achievement, study habits, and cognitive interference. The researchers found that test anxiety was positively correlated with cognitive interference, and negatively correlated with study habits, academic achievement, and academic self-concept (Swanson & Howell, 1996). Sena et al. (2007) reported that a similar study in 1983, by Bryan et al., using only elementary and middle school students, was conducted. Using a smaller sample of 60 students (30 with LD and 30 without), the researchers had the students complete the Test Anxiety Scale for Children (TASC: Sarason, Davidson, Lighthall, Waite, & Ruebush, 1960). According to Sena et al. (2007), the study indicated that higher levels of test anxiety were reported by students with LD. The study, as reported by Sena et al. (2007), also revealed that test anxiety scores in students with LD were a significant predictor of achievement on both math and reading test scores. In a very current research study conducted by Sena et al. (2007), a new test anxiety instrument was used to determine "the relationship between elementary and secondary school students with and without LD and different aspects of test anxiety" (Sena et al., 2007, p. 4). The researchers used the Test Anxiety Inventory for Children and Adolescents (TAICA) with a group of 774 students aged 9-19 years old. Of the 774 students, 195 students were classified as LD using the criteria consistent with the 1997 Individuals with Disabilities Education Act (IDEA). Several items were tested within the research using the "TAICA Social Humiliation, Physiological Hyperarousal, Worry, Cognitive Obstruction/Inattention, Performance Enhancement/Facilitation, Anxiety, Lie, and Total Test Anxiety scales as the criterion" (Sena et al., 2007, p. 11). Multiple correlations were examined and the research showed that students with LD had a positive correlation to higher Cognitive Obstruction/Inattention scores and Worry scores, and lower Performance Enhancement/Facilitation, Anxiety scores and Lie scale scores. Students with and without LD that were female had higher Total Test Anxiety scores, Social Humiliation scores, Cognitive Obstructive/Inattention scores, Worry scores, and higher Physiological

Hyperarousal scores. The researchers concluded that the greatest predictor of LD is a high Worry score, which the researchers report is the strongest cognitive factor of test anxiety and affects working memory in a negative way (Sena et al., 2007). Within this research, it is important to note that, although the sample size was quite large, the students were predominantly European American, which could be a limitation to this study.

Interventions

After understanding portions of the scope and prevalence of test anxiety, as well as the effects, it is important to know what type of research and professional recommendations have been made on the problem and interventions for students who suffer from test anxiety. Within this section, several different methods and recommendations for relieving tension and anxiety in students will be explored. In the research of Supon (2004), recommendations were made on several different areas in which educators can simply change some of their teaching methods to assist students in reducing test anxiety. Supon (2004) suggested that educators focus on formative factors, habitual prudence, and purposeful learning experiences. The researcher explained that formative factors are the means through which an educator places emphasis on instruction before, during, and after testing, with the emphasis being that teacher uses many different forms of assessment, rather than one all-important test. Supon (2004) also recommended that instructors teach methods of good study habits such as note-taking, and reviewing skills to make students feel more confident about their abilities. Habitual prudence was explained as focusing on proper lighting, eliminating distractions during test taking, and giving students the proper tools (pencils), as well as simple suggestions like not advertising class grades and not using red pens for grading. The last area upon which Supon (2004) recommended educators focus is the aspect of purposeful learning experiences. Supon explained that many teachers are so focused on state-mandated testing that they begin to instruct their students on specific content that may be on the test. Supon recommends staying away from this method as

students are more apt to learn when they can make meaningful connections to real-life experiences (2004). In a similar study by Casbarro (2004), the researcher suggests that students should be allowed an outlet to express their feelings about testing individually, in small groups, or in their classroom. Casbarro (2004) also recommended that administrators can play a key role in reducing test anxiety by making all educators in the school aware of the prevalence and impact of the problem and forming plans to help reduce anxiety, even in students who are not identified as having test anxiety.

As schools and educators begin to realize the impact of test anxiety and ways to try to help students, individual educators have begun to try interventions which may help their students relax in the classroom or in the school, in general. In a study related to how noise and music affect behavior, a lunchroom setting was researched, and it was found that music can have a direct impact on student behavior (Chalmers, Olson, & Zurkowski, 1999). The authors used three different scenarios, during a particular length of time, in order to see if there was a significant difference in the amount of noise and behavior problems within the cafeteria: no music, classical music, and popular music. Within this study, the researchers used a device to measure decibel levels, and they also calculated the amount of times that children were reprimanded for various behavior problems. The study found that there is a significant drop in both behavior problems and noise levels when music is played. The researchers also found that there is a larger drop in noise and behaviors when popular music is played (Chalmers, Olson, & Zurkowski, 1999).

In an action research project conducted at an elementary school, administrators attempted to identify students who suffer from test anxiety and find methods to help them (Cheek, Bradley, Reynolds, & Coy, 2002). Following high-stakes, state-mandated testing, 16 students were referred to this intervention because they failed sections on math and reading, and were

identified as having feelings of extreme stress and anxiety due to test taking. The students were initially interviewed by the school counselor, and all had feelings of frustration toward the test taking process; some of the students even exhibited physical symptoms such as fatigue, nausea, and vomiting (Cheek et.al, 2002). All 16 of the students were then placed into an intervention program which was initiated by the school counselors, and later used by classroom teachers, and then was spread to the entire school. The students were administered a test-anxiety, exposure hierarchy, and then they began relaxation exercises. The students were taught a relaxation technique called "Stop, Drop, and Roll." In an effort to facilitate integration, this relaxation technique utilized the well-known fire safety precautions that many children are taught in school (Cheek et al, 2002). Specifically, the students were instructed that, when they felt the "fire" of anxiety and stress, they should "Stop" (actually put down their pencils and place their hands on the table while concentrating on the coolness of the surface). Then they were to "Drop" their heads forward, and roll them around gently while taking three deep breaths. The group members practiced the relaxation technique as classical music was played (Cheek et al, 2002, p. 2). After completing the training, the students involved then used the technique to teach other students in their classrooms. Prior to a new year of high-stakes testing, the school taught all of the students the method at school assemblies, and all of the teachers implemented the method in their classrooms. In conclusion, all of the initial students involved in the intervention reported feeling more relaxed and felt better about the administration of tests. Ninety-four percent of the original participants passed all or part of the mathematics section, which was initially failed, and 75% of the students passed the reading portion (Cheek et al, 2002).

In yet another intervention method, an action research project was conducted on team testing (Hurren, Rutledge, & Garvin, 2006). The author explained that many teachers find it very

frustrating that their students can demonstrate understanding of a lesson and its entire concept, yet when faced with a written test, some students do very poorly. The author outlined two particular teachers who are using action research to implement a model of team testing. Team testing is a concept in which students are grouped and collaborate together during testing, so that the test can be used as a learning model (Hurren, Rutledge, & Garvin, 2006). Both teachers found that team testing served more than one purpose; it acted to reduce test anxiety because the students knew that they would have a partner or team from which to draw knowledge, and it also served as a way for students to work together and use critical thinking skills to recall information they had learned in previous class discussions (Hurren, Rutledge, & Garvin, 2006). Both instructors warned that they used team testing as just one means of assessment, as there are some drawbacks to this method such as some students "taking over" while others contributed very little to the answers given. Both teachers found that student attitudes towards test taking improved using this method, and overall grades improved, as the emphasis on the class changed to contributing to discussions, rather than focusing on what may be on the test (Hurren, Rutledge, & Garvin, 2006).

Data Collection and Results

Method and Design

This action research project was conducted in an elementary classroom of 18 students. 10 female and 8 male students were in third grade. Sixteen of the students were Caucasian, and 2 of the students were Hispanic. The class was more diverse in ability level; there were three ESL students, one student with an IEP, and two students who were in the gifted program. All students in the classroom were given the same information so there was not a control group.

Prior to any testing, the students were introduced to the idea of test anxiety. The students answered a short questionnaire, which measured the level of stress that they feel while taking a test (see Appendix A). The questionnaire contained nine questions with possible responses of "never," "sometimes," or "always." Each item that the student answered "never" was given a value of 0, each item that the student answered "sometimes" was given a value of 1, and each item that the student answered "always" was given a value of 2. The overall score of the questionnaire had a possibility of ranging from 0 to 18. Each day, for the next 5 days all of the students went through some short, 15-minute exercises on how to control and relieve some of the stress that they feel.

On day 1, the group talked about what stress feels like physically (increased heart rate, flushed face, clammy hands) and the students had group discussions about different situations in which they felt that way. On day 2, the students talked aloud and made their own list of ways that they can avoid some stress prior to taking a test. The students, list included eating a good breakfast, getting enough sleep, studying for their test, and being prepared with pencils and paper for the test. The students then learned a lesson on positive self-talk, and, as a class, the students practiced positive self-talk to each other, then to themselves. On day 3, the students participated in some very basic stretching exercises, shoulder rolls, and breathing exercises to help reduce stress. At this point, the students were introduced to a method of identifying and stopping anxiety during a test called "stop and take five." "Stop and take five" is a very simple method that the student will use when they feel their heart beating very fast and they cannot concentrate on the test. The student will be instructed to stop what they are doing and take five deep breaths, while slowly relaxing and rolling their shoulders and head around. Once the student is finished with the exercise, they should pick their pencil back up and resume taking the test. On day 5, all of the

small methods were practiced again, and posters were made to remind students how to avoid stress and how to relieve stress; the posters were placed around the room.

Every Friday, the students are given a test in every subject, which are created by the classroom teacher. There are usually five tests (math, science, social studies, reading, and spelling). This is a process that the students have been accustomed to doing since the beginning of the school year. At the end of the day, the researcher gave the students the test anxiety questionnaire, again, to have a pre-and post-comparison of overall test-taking attitudes. Upon completion of the questionnaire, the researcher asked each student if they felt that the interventions had helped them.

Data Collection

For the initial data collection, the researcher collected quantitative data through student Dynamic Indicators of Basic Early Literacy Skills (DIBELS) scores. All of the most recent DIBELS scores were collected and placed in percentile range order, rather than raw score data. All of this data was collected and analyzed to determine if there are any correlations to literacy levels and test anxiety attitudes.

A second data collection method was the student survey, which is qualitative and quantitative data. Prior to the intervention, all of the students were given a questionnaire about their own test anxiety. After the intervention period, the students were then given the same questionnaire in order to determine whether their overall feelings and attitude about testing changed. The researcher also conducted short, informal student interviews that were post-intervention to determine whether the students felt that these interventions helped them, overall.

Results of Data

Of the 18 students, 5 scored below the 50th percentile on the DIBELS, 6 scored between the 50th and the 89th percentile range, and 7 scored above the 90th percentile. Pre-test data (see Figure 1) showed that DIBELS scores and general test anxiety questionnaire scores were fairly sporadic, with no clear patterns. Post-test data (see Figure 2) did not reveal any major patterns, either. Pre-test and post-test data showed that there was no strong correlation between gender or race with overall test anxiety scores. There was not a large enough sample to make any correlations between students with a diagnosed learning disability and test anxiety scores. The mean pre-test anxiety score was 6.56, and the scores ranged from 3-13 (with 0 being the lowest possible anxiety score and 18 being the highest possible anxiety score). The mean post-test anxiety score was 6.72, and the scores ranged from 1 to 13. The mean test anxiety scores were not reduced, as hoped, however, the median of scores was slightly reduced. The pre-test median score was 7, while the post-test median score was 5.5.

Data was then compared using DIBELS percentile ranges and test anxiety scores. Pre- and post-test scores were combined, and then compared to overall DIBELS percentile ranking using three different groups: those students scoring under the 50th percentile on the DIBELS, those scoring between the 50th and 89th percentile on the DIBELS, and those scoring above the 90th percentile on the DIBELS. The researcher found that the mean scores of test anxiety for those students scoring less than the 50th percentile on the DIBELS was 8.7, with scores ranging between 6 and 13. The mean score of test anxiety for those students scoring between the 50th and the 89th percentile was 8.17, with scores ranging between 2 and 13. The mean scores of those students scoring above the 90th percentile on the DIBELS was 3.86, with scores ranging from 1 to 7. The mean scores for those students scoring above the 90th percentile were lower than those

of any other group (see Figure 3). All students were asked, at the conclusion of the research, if

they felt that the interventions to help alleviate test anxiety were helpful to them. All of the

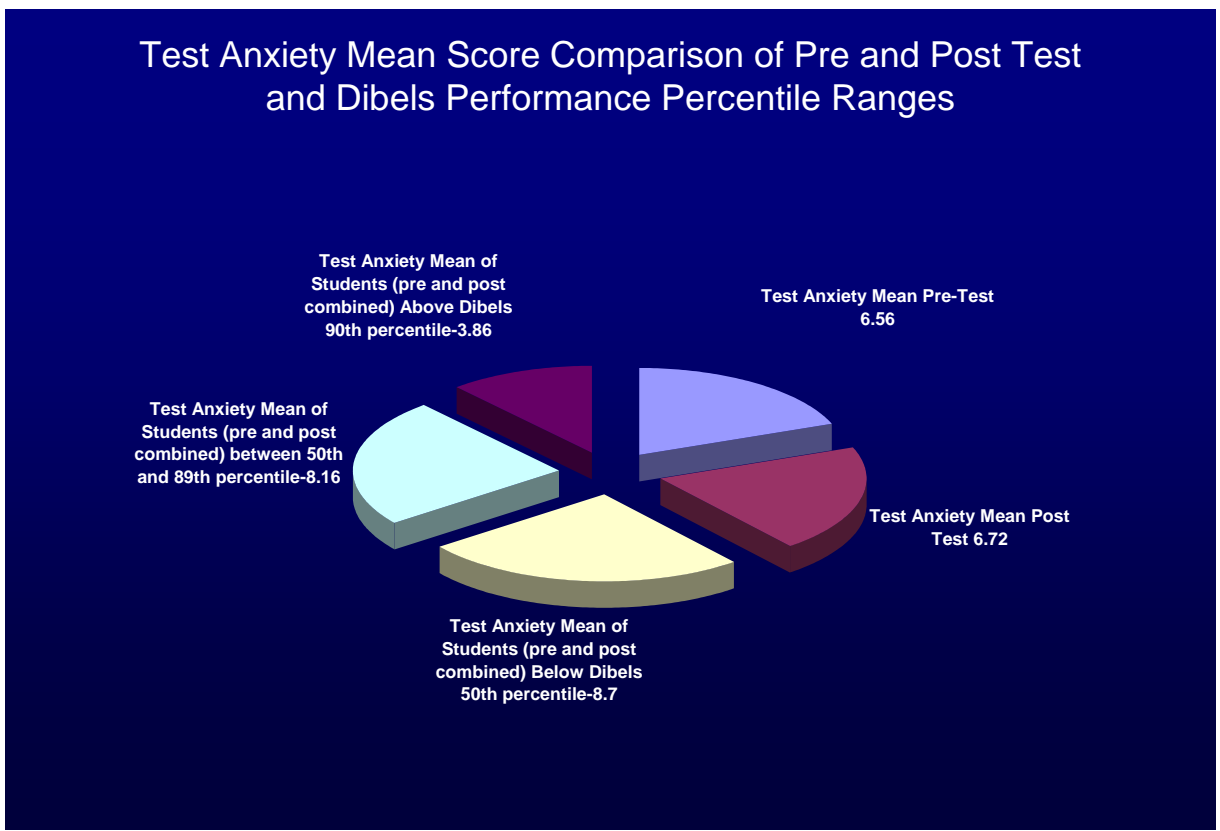students answered that they were helpful.

Figure 3. Mean score comparison of pre-test and post-test Test Anxiety questionnaire, and

DIBELS percentile ranges.

Pre-Test--DIBELS Percentile And Anxiety Score Comparison

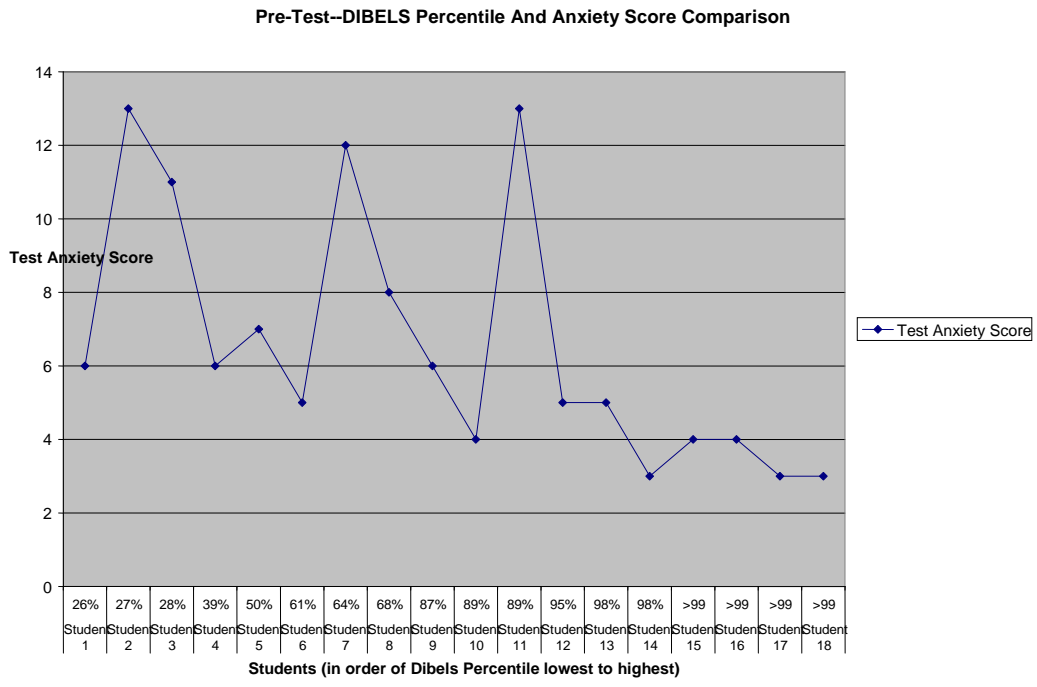*Figure 1*. Pre-test DIBELS percentile range and test anxiety questionnaire comparison.

Post Test--DIBELS Percentile and Test Anxiety Comparison
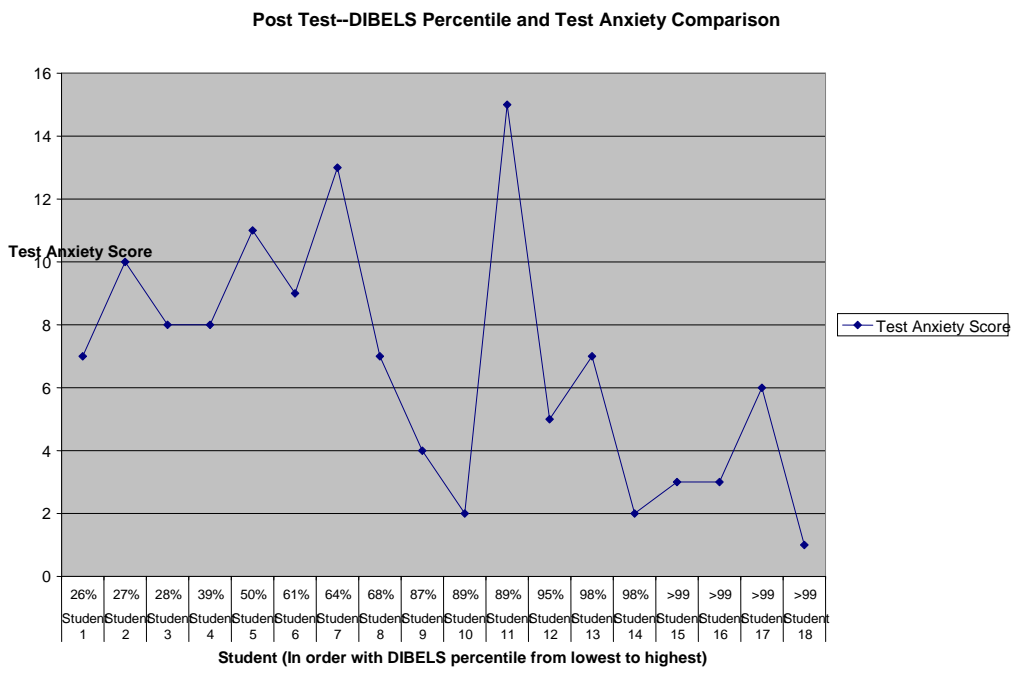

Figure 2. Post-test DIBELS percentile range and test anxiety questionnaire comparison.

Timeline

This action research project was conducted during student teaching in a 7-week period. The 1st through 5th weeks were spent becoming familiar with the students and their routine, as well as data collection. The 6th week was spent educating the students on test anxiety, and ways to relieve that anxiety, as discussed in the method and section, design and conducting pre-and post-test questionnaires.

Negotiations

Prior to beginning this research project, there were some negotiations that had to be considered. The classroom teacher had to be involved as he/she had all of the records of the students, previous DIBELS test scores. The classroom teacher also had much insight into the student ability levels, and which students may suffer from test anxiety. Student absenteeism caused problems with the intervention because one student was absent during a critical portion of the test-anxiety relaxation training. The researcher did not use any data from the student that was absent. The principal must approve the project, as it is a change in the way that the students traditionally take tests. Also, a change in normal teaching for the action researcher should be negotiated with the in-class teacher. Observations and data collection were performed during class time, which took the action researcher away from normal classroom duties during the student teaching time.

<div align="center">Conclusions and Recommendations</div>

<div align="center">*Conclusions*</div>

The research indicated that there are some differences in the levels of test anxiety in students with differing literacy levels. The results indicate that there is no difference in test anxiety levels among students who scored below the 50th percentile and students who scored between the 50th and the 89th percentile. However, the mean test anxiety levels of those scoring

above the 90th percentile range are noticeably lower. The pre-test and the post-test data did not show a reduction in the mean test anxiety scores after interventions were done to try to help students reduce test anxiety. However, when questioned, all of the students who participated in this study reported that these interventions were helpful to them.

Testing is becoming more and more important to everyone involved in the classroom, and it has become necessary to look at how the stress of testing influences students. For the individual teacher, high-stakes testing can be a direct reflection on their teaching practice. And for the individual student, high-stakes testing is a reflection of their abilities—whether true or not. Test anxiety has been linked to many different problems, including lack of focus, poor testing abilities, and behavior problems. Researchers (Sena et al. 2007) now believe that anxiety also has a direct effect on a person's memory, which can certainly have a direct impact on a student's performance on a test. Even very young students are now prone to test anxiety, which can greatly reduce the student's ability to score as high as they are capable of on a given test. Any interventions that can help reduce some of the stress are worth practicing, especially at a very young age.

Recommendations

More research is needed in order to further study the effects of different interventions on helping to reduce test anxiety. The sample size and the diversity of the class that was used in this action research project was very small. Time was another factor that was very limited within this research. A longitudinal study may be more effective in comparing and contrasting, not only attitudes about testing, in general, but actually comparing long-term test results.

It is this researcher's hope that teaching skills to help alleviate test anxiety will actually help reduce the amount of fear and anxiety that students experience while testing. This

researcher would like to teach skills to students at a very early age in the hope that this will allow them to have a tool that they can use throughout their school career to reduce the stress that they feel during testing. Immediate results may not be dramatic, but the overall impact of helping students cope with anxiety may have life-long effects.

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Appendix A

Test Anxiety Questionnaire

1. I get really nervous a few days before taking a test.

2. I can't sleep the night before a test.

3. I can't eat the morning of a test.

4. My palms sweat or my stomach has butterflies when the test is passed out.

5. I can't focus or concentrate when I first read the test.

6. I feel light-headed like I'm going to be sick during the test.

7. I change my answers many times.

8. I constantly worry about how much time I have left.

9. After the test, I am really tired.

Exploring Success on Multiple Learning Levels

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Education 590, Spring 2009

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Introduction to the Problem

When I was in middle and high school, 15 years ago, the inclusion classroom was not typical, as it is in many schools today. I recall students being placed in remedial classes with other students who also experienced any matter of learning disabilities. Unfortunately, each of these students was labeled by their classmates as slow, dumb, or, even, as the smart kid who thought they were better than everyone else, as a result of this placement. One solution to this problem is the inclusion classroom, where students who have an individualized education plan (IEP) attend class in a regular classroom and a specified faculty member, who is trained in exceptional education, oversees their case and provides additional assistance in the classroom, according to their plan. These students are receiving the assistance that they need, but are not being ostracized by their peers, as a result. More often than not, students are unaware of which classmates are in need of inclusion services, depending on the teaching methods used in the classroom.

Unfortunately, students who do not have an IEP may not receive the services that they need, and may not be as successful as they could be. Each student has his or her own learning style, not to mention interests and abilities. Gardner's theory of Multiple Intelligences outlines eight distinct areas of intelligence which challenge the idea that all students can learn the same things in the same way. This project is meant to demonstrate the need for differentiated instruction and modified activities, in order for all students to be able to be successful.

The study will include 19, seventh-grade students, heterogeneously mixed, and placed on various vocabulary tiers, based on the results of a pre-test of seventh-grade-level vocabulary. Several students in this class have identified learning needs with an IEP in place; however, any student needing modifications will receive the services needed. A myriad of activities will be

used to help students to learn and retain the vocabulary. There will be a total of four tiers: Tier A, and Tiers 1-3. Students on Tiers A, 1, and 2 will be exposed to the same grade level words for 1 week, and will then be tested on all of the words. Students on each tier will have a different number of words for which they will be responsible, and some students will receive a modified test format such as multiple choice. Students on Tier 3 will receive words above grade level, with more challenging activities, and will mostly work independently.

Review of Literature

There has been a great deal of research done within the past 10 years concerning the need for differentiated instruction in every classroom. This is no doubt, due to the results of the 26th Annual Report to Congress on IDEA in 2005, which contends that 96% of general education teachers have students with learning disabilities in their classroom, and 90% of those teachers have at least three students with an IEP (Ellis, Gable, Gregg, & Rock, 2008). Baglieri and Knopf (2004) note that, although students may be in need of adaptation, modifications, and/or accommodations, there should be no reduction or simplification of the curriculum, but rather a plethora of activities that make the differences in students positive.

Many teachers fear that the use of differentiated instruction in the classroom will limit a student's ability to perform successfully on high-stakes, standardized tests. More and more research, however, supports the idea that differentiated instruction assists in an individual's knowledge acquisition and skills performance (Anderson, 2007). Differentiated instruction targets the need for all students to be challenged at their academic and learning levels, but to be successful, as well. Advanced learners need more challenging work, not just more work. According to Tomlinson (1995, p. 2), "Asking students to do more of what they already know is

hollow." She contends that giving advanced students extra work or additional assignments is not differentiation, but rather seems like a punishment, to those students.

Tiered learning is a method of differentiated instruction where the content is presented in assorted levels of complexity, based on the individual needs of the students. The number of tiers and the amount of students per tier will vary according to the needs of each individual student, as well as the method used for tiering. Tiers may be developed based on the readiness of a student, how the student learns, or by the student's specific interest. One important item of note is to ensure that each tier's activities vary in the level of complexity, and not in the quantity of work to be done. Work should be on grade level and challenging, while allowing all students to be successful in the completion of their task (Adams, & Pierce, 2003).

As teachers are making great strides to differentiate instruction and modify to meet the needs of students, there is also a level of responsibility that falls upon the student in order to be successful. Tomlinson, who has done much research on differentiation, can make an argument for either students or teachers as to who should carry the greater burden of responsibility. She does, however, address a third argument. The teacher and students should work together as a team where the differentiation is synergetic. The teacher acts as the coach and the students are his or her players. The most successful outcome is when both the coach and the players work together towards the same goal (2004).

Data Collection and Results

Purpose

The purpose of this study is to determine the effects that differentiation has on the ability of students at various levels to succeed in the area of vocabulary, while also being challenged in

their learning. The desired outcome is for students to feel challenged, to be successful, and to enjoy the lessons presented to them.

Procedure

This study took place in a seventh-grade, language arts classroom, where 19 students participated, including 9 girls and 10 boys. Five of the 19 participants had an active IEP, either for a learning disability or for giftedness. Each student attended this particular class, Monday through Friday, in a 90-minute block. After a grade-level-seven pre-test, students were placed on a tier, based on their knowledge of seventh-grade vocabulary. On Thursday of each week, students were given a new list of vocabulary words to study, and were asked to create flashcards with which to study each night. Many activities were conducted throughout the following week, including, but not limited to, using a graphic organizer, creating sentences which exhibit context clues and proper word usage, writing a story using the words, and matching the words to the appropriate picture.

Activities were often completed with partners or in groups of three to four, depending on the activity, with a minimum of one activity, each week, based on the interest of students. Students on Tier 3 participated in several activities throughout the week, using alternate vocabulary words, with some assignments requiring independent study. On the following Wednesday, students took a test on the vocabulary words, using various formats, based on the individual needs of students.

The survey instrument

Students will be asked to complete a survey which inquires how often students create vocabulary flashcards with which to study, if they feel that their words are too easy or difficult for them, and if they feel that they would be successful if they were not placed on their specified

tier. This survey was given at the end of the testing period, and was given anonymously in order to ensure the most accurate and honest results. (See Appendix A.)

Survey Results

According to the results of the student survey, 74% of students from all four tiers stated that their weekly vocabulary words were challenging for them. An equal amount of students claimed that their weekly vocabulary words were not too easy for them; however, only 26% of students said that they created weekly vocabulary words with which to study, and only 47% of students studied their vocabulary words almost every day. On the final question, 58% agreed or strongly agreed that they would not be challenged and successful without their designated tier, 15% disagreed or strongly disagreed, and 26% neither agreed nor disagreed. Tier 1 had the largest percentage of students who felt that their words were not challenging, and appears to be the tier with the least positive impact as a result of tiering. Tiers 2 and 3 had 100% of students state that they were challenged, and 75% from Tier A felt challenged.

Test Results

The greatest impact for tiering was for students who were placed on Tier A. Student "R" was able to go from making a D to a B on test four as a result of tiering, and student "S" received a passing score rather than a failing score on test two. Student "D" passed only 50% of the tests and student "P" passed only 25% of the tests with tiering. Students on Tiers 2 and 3 did not have changes in score as a result of tiering, but the assigned words at Tier 2 were at grade level, while the assigned words at Tier 3 were above grade level.

Conclusions and Recommendations

Conclusions

The research for this project indicated that differentiated instruction and tiered vocabulary enables students to be challenged and successful while remaining on grade level. As a result of this research project, I have realized the importance of modification and the impact that it can have on the success or failure of an individual student. I have also concluded that students who can experience success in the classroom are more motivated, and exhibit greater initiative, than those who consistently experience failure. Many of the students in this particular classroom would not have been as successful or as motivated without the differentiation and tiered vocabulary and grading.

I have also concluded that students must also be moved from one tier to another if they experience success with ease, such as students who score 100% on each test, or if they experience failure on a consistent basis. In the latter case, additional modifications may need to be in place to ensure the success of the student, such as multiple choice or read-aloud test.

Recommendations

I would definitely recommend that teachers explore using differentiation and tiering in their classroom and find the method of tiering that best fits their teaching style. There should be opportunities and incentives for students to move up from one tier to another. For students who struggle, the testing format may change and the tier stays the same, or vice versa, in order for students to feel that they have made progress. One important item to keep in mind is to ensure that no student is working below grade level because they are struggling, and, also, that no student is being required to do extra work because they are advanced.

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Appendix A
Student Survey

Please answer each of the following questions as honestly as possible. Your answers will be anonymous and will not be used for the purpose of a classroom grade. Use the following scale to answer each question.

1- **Strongly Agree**
2- **Agree**
3- **Neither Agree nor Disagree**
4- **Disagree**
5- **Strongly Disagree**

1. **My weekly vocabulary words are challenging for me._____**
2. **My weekly vocabulary words are too easy for me._____**
3. **I create vocabulary flashcards each week with which to study._____**
4. **I study my vocabulary words almost every day._____**
5. **I would not be successful on my vocabulary tests if my teacher did not place me on a designated tier._____**

Effects of a Real-world Writing Curriculum on Student Participation and Performance

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Education 590, Spring 2009

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Introduction to the Problem

A Lack of Skilled Writers in the Workplace

Having spent many years of my life in a corporate environment, I have learned, first-hand, the importance of writing effectively in the business world. I have found that skilled writers advance more rapidly than their less-skilled colleagues, and are coveted for their ability to communicate effectively. Unfortunately, far too many educated professionals struggle with grammar, organization, and clarity in their writing. These less-skilled writers generally have little confidence in their ability to articulate effectively, and some demonstrate significant anxiety when writing for an audience.

I believe that good writing skills make us much more viable in the modern job market, and that the ability to communicate effectively can improve our overall performance in almost any profession. I question whether today's students fully appreciate the importance of writing in the professional world. I wonder whether these students find their academic writing assignments relevant to their real lives, and whether they associate these assignments to a long-term goal of improving their future value in the professional marketplace. Can I demonstrate the long-term relevance of academic writing through a writing curriculum which directly relates to students' personal and professional goals? Might such an exercise motivate students to improve their writing skills? I plan to explore these questions further through the proposed intervention described in this paper.

Review of Literature

Educators, researchers, and students agree that the quality of academic performance improves when students view assignments as personally relevant and interesting (Chapman, 2002; Roberts, 1999). Evidence suggests that students who recognize the long-term usefulness of

good writing skills are more motivated to improve their own writing ability, and are more inclined to practice self-regulation, rather than seeking only to satisfy a current writing teacher's basest expectations (Kemmery & Cook, 2002; Potter, McCormick, & Busching, 2001). By internalizing personal writing goals, students can enhance their academic writing performance, and form effective writing habits, which will serve them well beyond their academic careers.

An article, titled "Academic and Life Goals: Insights from Adolescent Writers," describes lessons learned through interviews with 19 students (Potter et al., 2001). Two high-achieving students, who were described as having a "mastery" orientation to writing, as opposed to writing solely to meet the requirements of an academic assignment, articulated their long-term career goals, and explained how effective writing skills would be useful to them beyond school. Interestingly, both of these students seemed to describe a disconnect between their long-term writing goals and the objectives of their school writing class; they complied with school assignments, in order to satisfy basic academic performance objectives, not because they felt that the assignments actually furthered their progress toward effective writing in the "real world." Another high achiever explained that the objectives of academic writing assignments conflicted so much with his personal goals that he sometimes refused to participate (Potter et al., 2001).

Other students, who did not perform as well academically, seemed to equate good writing with the reduction of grammatical errors, and sought only to satisfy their teacher's minimum requirements. Generally, students identified their best writing as the writing that articulated a strong personal belief, and characterized their own sense of identity. The authors of this article conclude that writing classes thrive when students are encouraged to explore subject matter that is personally relevant to them, their career goals, and their observations about the world around them (Potter et al., 2001).

A survey of related literature provides further support for constructing a writing curriculum that directly relates to students' emerging identities and long-term aspirations (Girod, Pardales, Cavanaugh, & Wadsworth, 2005; van der Vliet & Deacon, 2004). Teens interviewed for an article, titled "By Teens, For Teachers: A Descriptive Study of Adolescence," present an overwhelming desperation to study something of personal interest, and to pursue more independent inquiry (Girod et al., 2005).

The positive effects of integrating writing with students' longer-term career goals have been demonstrated by students at Baltimore's Eastern Technical High School (Kemmery & Cook, 2002). The school's technical writing program, originally instituted approximately 10 years ago, began in response to complaints from the local business community that recent high school graduates lacked sufficient writing skills to perform well in the modern workplace. Students who participate in the technical writing program at Eastern Tech hone their communication skills through a writing curriculum which directly relates to their primary focus of study. The positive effects of the program have already been reaped, not just by local employers, but also by the students, themselves. Participating students indicate that they feel much better prepared for entering the workforce because they understand, and have experience with, the practical applications of writing for their future professions. Additionally, these students report that they have successfully applied their new technical writing skills to assignments in other classes. Student enthusiasm about the program is overwhelming; the article indicates that the technical writing class generates more participation than any other English elective offered at Eastern Technical High School (Kemmery & Cook, 2002).

Available literature suggests that students may not always perceive contemporary writing curriculums as relevant or useful. Similarly, research shows that writing performance improves

as students connect short-term academic assignments to longer-term life goals. This study will evaluate the effects of a real-world writing curriculum on students' understanding of the importance and relevance of writing skills in everyday life. Two major questions will be investigated: Can a real-world writing curriculum motivate students beyond "making the grade?" Can academic writing be improved by exploring the value of effective writing skills in a post-academic setting?

<p align="center">Data Collection and Results</p>

<p align="center">*Data Collection*</p>

In order to measure fluctuations in student perceptions of the personal relevance of writing in their everyday lives, I asked each participant to complete surveys before and after the project (see Appendix A). The students were assigned unique identifiers so that their responses to the pre- and post-surveys could be compared without using their names. The survey used a Likert scale to measure student attitudes about writing and its practical usefulness for them. The pre- and post-survey also included space for students to comment about their personal attitudes regarding the general usefulness of writing. When interpreting and presenting this data, I also presented changes in respondents' pre- and post- comments.

Throughout the study, I served as an active participant observer. I tracked changes in students' demonstrated writing skills, and recorded my general observations regarding student participation and enthusiasm. Noteworthy findings from my own observations are presented, along with the results of the pre- and post- survey.

My overarching objective was to test the effectiveness of the real-world writing curriculum as a means of engaging students in the writing process and improving their

communication skills. I have made every effort to be as objective, as possible, in analyzing and interpreting the results of the study.

Subjects

The participants in this study included a total of 16 high school English students. The course was English 11 (for 11th graders); 15 of the participants were juniors, and 1 participant was a sophomore. There 10 ten female students and 6 males. Fifteen of the students were African-American, and one student was Caucasian. The school is considered to be an urban K-12 school. While it is part of the county's "magnet school" program, the student body is quite small, and overall academic performance has been under scrutiny for the last few years. The school qualifies for Title I funding, based on the incomes of most of the students' families.

Institutional Review Board

Students who were unwilling to participate in the study, or for whom no parental permission could be secured, completed the same assignments as their participating classmates. However, their feedback was not included in the results of the study.

Methodology

As part of a "Real-World Writing" unit, all students in my two English 11 classes completed a series of assignments which directly related to their own personalities and goals. Assignments included a resume and cover letter for a job the individual student actually envisioned pursuing, a thank you card or similar personal writing sample, a creative writing assignment based on the student's personal interpretation of an image, and an essay inspired by a strong personal belief. Most assignments had a practical application, and all assignments related directly to the students' values or long-term aspirations. I solicited feedback, from various experts, regarding the writing requirements and expectations of their fields. For example,

business professionals were asked to comment on the role of email in their environment, and describe what it means to be an effective communicator in the given setting. Special guests included a professional nurse, who spoke about the importance of effective communication skills in the medical field; and a published author, who professed the importance of using language effectively. Our author guest listened to original writing by the students and provided feedback.

Logistics and Special Considerations

I received approval for my unit plan from our principal. I did not require significant financial resources or tools, but did benefit from regular access to a computer lab for all students. The unit was spread over about 4 weeks, but other (unrelated) assignments were also interspersed throughout that time period.

<div align="center">

Results

</div>

Upon conclusion of the study, I compared the results from the pre- and post-survey, and presented them side by side, using graphs. Results are presented in Figures 1 through 4. In each of the figures, "Series 1" represents results from the pre-survey, and "Series 2" represents results from the post-survey.

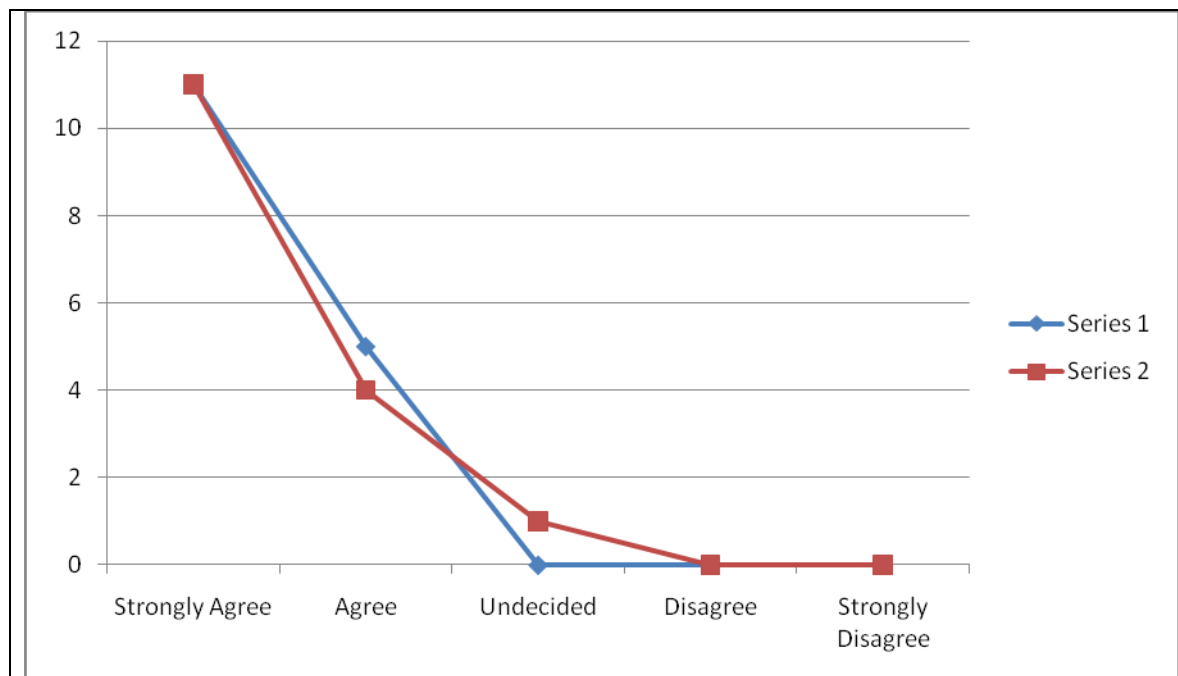*Figure 1.* Survey Item 1: "In general, I enjoy writing assignments for school."
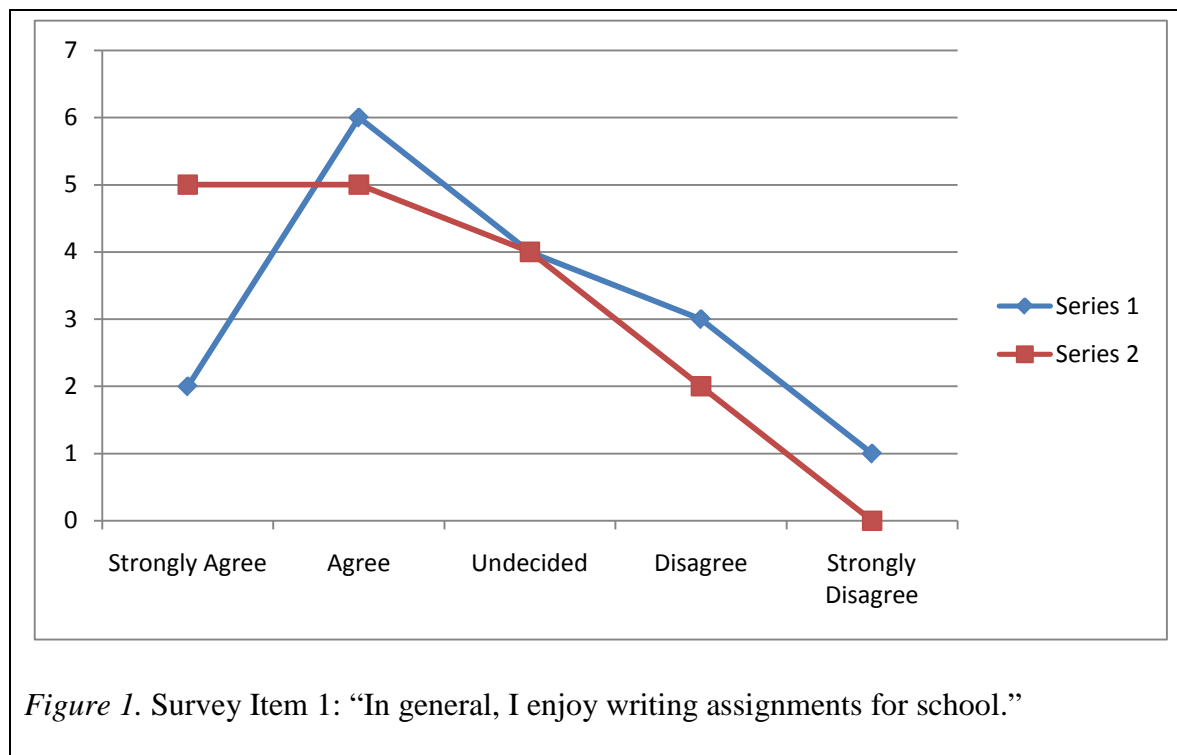
Figure 2. Survey Item 2: "I believe that good writing skills will be useful to me in my future career."
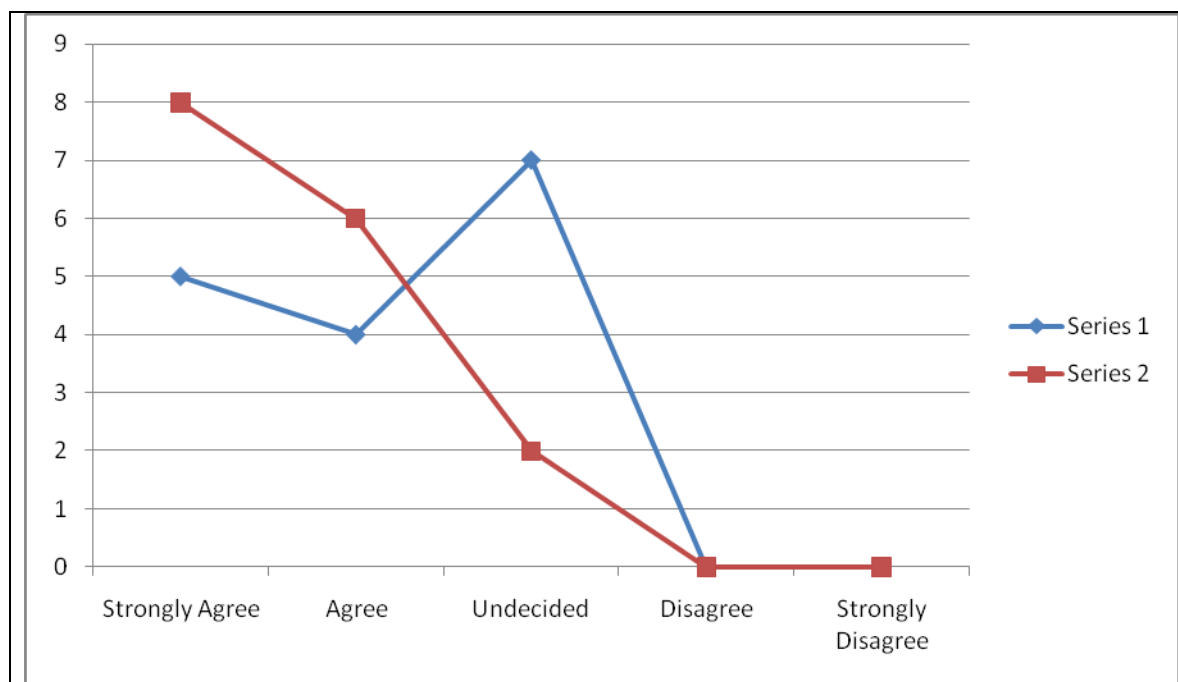
Figure 3. Survey Item 3: "I believe that good writing skills are important in everyday

life."

Figure 4. Survey Item 4: "I am interested in being a good writer."
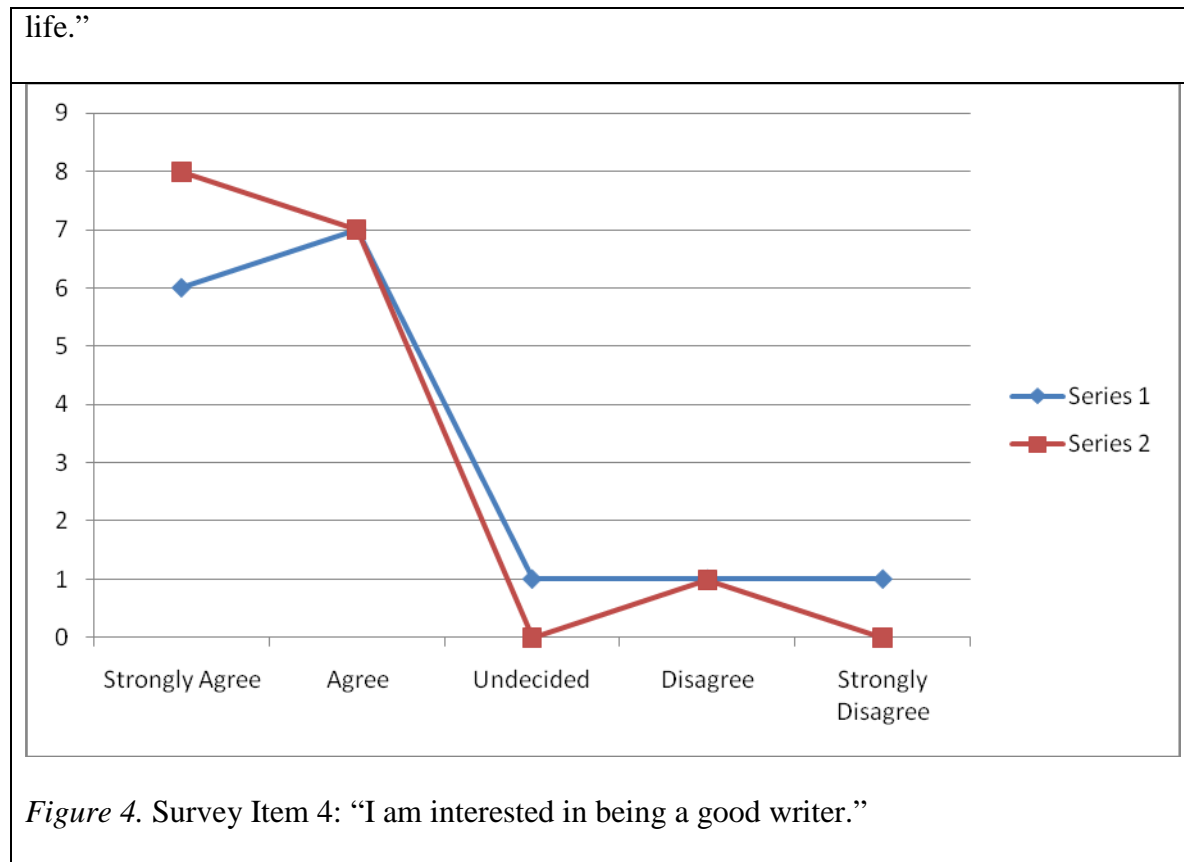
As demonstrated in the figures, participating students generally responded favorably to the real-world writing curriculum. Prior to the intervention, eight students (or 50% of theparticipants) agreed or strongly agreed with the statement, "In general, I enjoy writing assignments for school." Following the intervention, 10 students (or 63%) agreed or strongly agreed with the same statement. One student, who disagreed with the statement on the pre-survey but agreed with the same statement on the post-survey, commented before the intervention that, "When it comes to writing for school I really do not like writing." However, on the post-survey the same student commented that, "Personally I don't like writing a lot but this year my attitude has become a little more positive. The different types of writing have engaged me." Another student, who strongly agreed with the statement on both surveys, indicated on the post-survey, "I love writing about everything. Ms. White's class has made me love it even more." As an

observer of students' attitudes and progress during the course of the intervention, I found that students genuinely appreciated the opportunity to express their personal beliefs through "This I Believe" essays, and they seemed to appreciate the explicit connections made between formal writing and their future careers.

Somewhat surprisingly, students seemed to increase their appreciation for everyday writing more than professional writing, as a result of the intervention. This may be due to the fact that many students acknowledged, from the outset, that their prospective professions would require effective communication skills. While only 9 pre-survey respondents (or 56% of theparticipants) agreed or strongly agreed with the statement, "I believe that good writing skills are important in everyday life," that number jumped to 14 (or 88%) in the post-survey, for an increase of over 30 percentage points. Some students commented that, "I like writing because it releases all my stresses," or like writing as a means of self-expression.

When asked in the pre-survey to respond to the statement, "I am interested in being a good writer," 13 (or 81%) of the respondents agreed or strongly agreed. When asked the same question in the post-survey, 15 respondents (an astounding 94% of the participants) agreed or strongly agreed. The one student who disagreed with that statement on the post-survey strongly disagreed with the statement on the pre-survey, which suggests that even the most reluctant young writers increased their interest in improving their writing skills, over the course of the unit.

<div align="center">Conclusions and Recommendations</div>

<div align="center">*Conclusions*</div>

The results of the study suggest that student motivation improves when students are given assignments which respect their individuality and seem relevant to their current or future lives.

While this is surely not news to anyone who has served as an educator, these results lend credence to the popular notion that learning is facilitated by authentic engagement on the part of the student. When challenged to write on topics of interest to them, students demonstrated a genuine desire to perform well, often creating multiple drafts in order to perfect an assignment.

Recommendations

For many years, too many English teachers have relied upon the traditional, five-paragraph essay as the only valid means of enhancing and assessing student writing performance. It is my recommendation that English teachers work to incorporate some less traditional assignments into the curriculum, assignments which respect the individuality of the student and relate more directly to students' current and future lives.

The implementation of a more flexible and personalized writing curriculum would require very little expense, and promises huge rewards. Professional development to foster this kind of writing curriculum might occur through casual brainstorming with a colleague, or through brief training sessions in a more formal venue. The key to the success of such a program would be the open-mindedness of the teachers who implement it. Technology, specifically student access to computers, is helpful in any writing program, and this is no exception.

In conclusion, it is certainly our responsibility to teach students about clarity; organization; word choice; and good, old-fashioned grammar. All of these things can be taught, however, through nontraditional writing assignments which truly engage the student. The five-paragraph theme is not likely to die anytime soon, but there is room for so much more. Ask your students to articulate their core values through a personal narrative; ask them to market themselves to a prospective employer for the career of their dreams; or ask them to write the story they see in an old photograph or piece of art. They will run with it. They will be brilliant.

They will grow as writers, as students, and as people. Even their five-paragraph essays will improve, as a result of a range of writing activities which honor their interests and showcase their unique perspectives.

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Appendix A

Survey Administered Before and After the Real-World Writing Project

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Pre- and Post-Survey

Participant #:_____

Please read statements 1-4 and choose the response that most closely reflects your opinion: strongly agree (SA), agree (A), undecided (U), disagree (D), strongly disagree (SD). Be honest!

1. In general, I enjoy writing assignments for school.

     SA   A   U   D   SD

2. I believe that good writing skills will be useful to me in my future career.

     SA   A   U   D   SD

3. I believe that good writing skills are important in everyday life.

     SA   A   U   D   SD

4. I am interested in being a good writer.

     SA   A   U   D   SD

5. Please use the space below to comment on your general attitudes about writing. What do you like or dislike about it? Is it important for you, personally, to be a skilled writer? Why or why not?

Assessing Assessment: Comparing the Effects of Criterion-Referenced Testing and
Performance-Based Assessment on Sustained Content Retention

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Introduction to the Problem

The researcher's personal philosophy on education is essentialist in nature. A teacher's main focus is to ensure that the students in his or her charge attain proficiency in their assigned content discipline, and, thus, move on to the next level of their educational pursuit, whether that be the next class level, passage of end of course testing or graduation tests, or to college.

With current emphasis on utilization of standardized testing to hold both students and teachers accountable for mastery of content, it is more important than ever to develop strategies that ensure students have both mastered required material and retained the information in a useful way. The researcher, therefore, wants to find an effective way to teach students what they are required to know, and ensure that they can demonstrate effective recall of the information, when required. The researcher believes that assessment techniques may have an effect on student content retention and that this area bears further research. After spending 1 year in the classroom as a social studies teacher, the researcher feels that effective assessment is something that he wants and needs to spend more time studying so as to improve his effectiveness as a classroom instructor and to improve the performance of his students on state standardized tests.

The purpose of this study is to determine whether or not assessment methods affect student content retention. Student content retention is the primary focus of state-mandated, end-of-course testing. The researcher would like to know which method of assessment, criterion-referenced testing or performance-based assessment is more effective, in achieving increased content retention and lesson mastery. The end result is to improve student performance on high-stakes standardized testing. To be clear, the goal of the study is not to measure content knowledge demonstrated on the criterion-referenced or performance-based assessment administered, but to measure content retained as measured by pre- and post-tests.

Variables

There are some variables that may affect this study. One variable is the academic ability of each student. The classroom will be an included, heterogeneous grouping and could have significant variability in the prior academic achievement levels of the pupils. Some students may have exceptional needs which require classroom or instructional modification (per individual IEP).

A second variable is the background knowledge of the subject matter that each student will bring to the researcher's class. Some students may have benefited from better history instruction in their prior educational experience. To combat these two variables, the researcher will conduct pre- and post-testing of the unit content and will incorporate these pre- and post-test scores into the results of the end-of-unit testing. This pre- and post- test data will serve as the primary quantitative information used in the interpretation of this study. The researcher is concerned about improvement in content retention, as much as overall achievement.

Another variable may be the students' personal attitudes or interest in the subject matter. This could manifest itself either as a preconceived dislike for the subject of history, or a lack of interest in the particular subject matter of the unit. The role that student interest plays is an enormous part in student achievement, which is ultimately what the researcher is trying to find a way to improve. The researcher has included student questionnaires about attitudes towards history, as well as an introductory activity regarding the rationale for why the study of history is important, to limit the impact of this variable.

A fourth variable is the reading ability of each student. Student literacy is important because the study of history requires a certain amount of critical reading in order to gain comprehension of the subject matter. In order to help alleviate the impact of this variable, the

researcher will incorporate literacy strategies into the lesson plans to help students comprehend the material that they will be asked to read.

Research Questions

1. What is the effect of criterion-referenced testing and performance-based assessment on sustained material retention by students in a secondary-age student population?

2. Do student attitudes regarding content and the particular assessment instrument utilized have an impact on content retention?

Review of Literature

The passage of the No Child Left Behind education reform package in 2002 signaled the beginning of the next wave of accountability standards for teachers in today's classrooms. Annual state and school district report cards inform parents and communities about state and school progress. If progress is not satisfactory, major changes can be made within schools to improve academic performance. Clearly, this standards-based environment has had a dramatic impact on teachers everywhere, and, despite the uncertainty that will arise as a new administration and Congress take up the reauthorization of NCLB in 2009 and beyond, it is likely to bring much greater scrutiny on instructional methods and practices (Finn, 2008). Standards and accountability are nothing new, but it is clear that the chief criterion used to judge educators will continue to be the performance of their students on state-issued, standardized tests (Popham, 1998). In this environment, classroom assessment can be an invaluable tool for educators to utilize for grading, student needs, student motivation, and instructional effectiveness (Ohlsen, 2007). However, most educators remain ignorant about the essential elements of assessment and the relevance of assessment to instructional planning and delivery (Popham,

1998). Teachers in only 15 states are currently required to take a course, or otherwise demonstrate competency, in assessment practices (Tienken & Wilson, as cited in Ohlsen, 2007). The overriding concern for most school teachers remains coverage of assigned curriculum content in order to ensure that students have been exposed to all which they will be held accountable during testing (Popham, 1998). The emphasis on accountability should be a primary motivator for educators to familiarize themselves with effective methods of assessment in order to develop strategies that will ensure that students are mastering the required content standards, as well as evaluating the effectiveness of instructional efforts. The goal of good assessment should be to enhance instruction, not just measure learning (Stiggins, as cited in Ohslen, 2007).

While the purpose of this review is to evaluate assessment methods, as related to sustained content retention, it is impossible to do so without first looking at rationales for testing, and, by extension, grading. In order to answer the question of how we are to evaluate student learning, we must first be concerned with why we are evaluating student learning, and what that evaluation means in the greater context of remaining consistent with our ultimate educational objectives (Kohn, 1994). There are, according to Kohn (1994), three levels of fundamental assumptions about why we grade, each representing a different level of philosophical analysis. The first level is the superficial assumption that takes for granted that student work must receive a grade, and that students ought to be concerned about the grades that they receive. The second level asks whether this traditional attitude is really necessary or useful in assessing student performance, and looks for a deeper understanding of student achievement. It is this second level that, we will see later, is influencing the new wave of assessment methods. The third level looks more deeply into defining the reasons for assessing, in order to arrive at a functionally-valid method of testing.

Grading rationales, regardless of philosophy, can be grouped under three headings: sorting, motivation, and feedback (Kohn, 1994). Sorting has been widely criticized as a grading rationale. Motivation is a major driving force behind assessment. However, grades as a source of extrinsic motivation have been shown to actually undermine the intrinsic drive to learn, and are proven to be detrimental to creativity and higher-order thinking skills (Kohn, 1994). Also, assessment instruments that enhance learning share the trait of high perceived importance by students (Carlson, 2003). Since all students do not value the same experiences, incorporation of strategies that increase an evaluation's meaning to students may enhance learning and better represent student achievement (Carlson, 2003). Feedback is, likewise, a common motive for assessment that attempts to enable students to learn more effectively by internalizing efforts toward high standards (Kohn, 1994). Feedback is likely only to be effective if the students succeed or fail, not as a reward or punishment, but as information (Kohn, 1994). Clearly, in order for students to receive feedback from their graded work, they must understand exactly what is expected of them, before the assignment, so that they can evaluate the meaning of their grades (Anderson, 1993). Students must know the following, at the outset of an assignment:

1. What they are to learn.

2. How they are to learn it.

3. How they are to demonstrate what they have learned.

4. How the quality of their learning will be evaluated. (Anderson, 1993, p. 233)

From all of this, we can see that grading does not equal assessment in and of itself. Grading, from an administrative standpoint, is necessary, but the evaluative function provided by a teacher, in order to support the learning progress of the student, is far more critical (Ericksen & Bluestone, 1971). Therefore, grading and reporting should always involve reference to learning

criteria, in order to offer students adequate feedback on their progress that goes beyond a letter grade (Guskey, 1996). The purpose of a test is to determine if a student has mastered the prescribed learning objectives. This definition gives us a starting point for a look at the various assessment methods in use today (Wong & Wong, 1998). Grades then can only be as good as the assessment system from which they were assigned (Wiggins, 1994).

There are three major assessment techniques that receive major discussion in the literature; each will be discussed in detail. Each assessment technique seems to fit along a continuum of educational philosophy, as it relates to the grading rationales and philosophy levels described earlier, as well as the type of information that is to be assessed. This continuum also follows a timeline of advocacy for each type of assessment that matches advocacy for different viewpoints as to the purpose of grading and assessment. There is virtually no literature that quantitatively compares the three methods from a content attainment standpoint, and, usually, any comparison that appears, at all, is done in a qualitative, and, even, dismissive way, as if it represents the "old" way of thinking, and is, therefore no longer valid. For example, one such project claiming that increased learning and extended experience were contributing factors to student preference for performance-based assessment over more traditional testing methods stated that "no data were collected to determine if the students had truly learned more, achieved higher grades, or understood concepts better by engaging in the differentiated, alternative assessments" (Waters, Smeaton, & Burns, 2004, p. 99). The literature seems to reflect conflicts of personal viewpoints and philosophies, rather than analysis of which method actually is more effective.

The purpose of this review is to examine the rationales and methods associated with each type of assessment: norm-referenced testing, criterion-referenced testing, and performance-based

assessments. The researcher will give information that will be helpful in the selection of a type of assessment most effective in measuring student performance, offer a framework for improving instruction, make learning more meaningful, provide a way to evaluate the effectiveness of instruction, and promote sustained content retention. The researcher will also demonstrate that the type of assessment mechanism that is chosen will depend heavily on a teacher's personal viewpoints about the nature of grading, described earlier.

Norm-referenced Testing

The first method, and probably the most "traditional" of assessments, is the norm-referenced test, better known as grading on the curve. The most common use of this testing method is to group or rank examinees based on their performance on the examination (Lindheim, 1980). This type of testing puts students in competition with each other as to how they will fall along the grade distribution curve, and it is the student's percentile of achievement, as compared to all other students, that determines a particular student's grade (The Center for Research on Learning and Teaching, 1976). Norm-referenced testing fits squarely into the sorting rationale for grading, and is roundly criticized as a method for measuring student achievement (Kohn, 1994). Glaser (1963) points out that this method is totally ineffective when performance is uniformly excellent, which effectively renders comparisons among students meaningless. Furthermore, norm-referenced testing procedures offer no guidance as to the development of instructional techniques, which creates a gap between instruction and assessment (Popham, 1998). Also, these types of grading systems can provide a misleading picture of an instructional program's, or an educator's, effectiveness (Popham, 1998). These grading systems lend themselves more readily to grade-inflation because of their lack of grounding in performance (The Center for Research on Learning and Teaching, 1976). Likewise, norm-referenced tests fail

to demonstrate differences when instructors grade more stringently, or easily, because excellence is determined by competition with other students, rather than through mastery of content (Kohn, 1994).

Norm-referenced assessment has a definite role within our educational system, as it is essential in situations where ranking of examinees is required, such as class placement or admissions situations (Lindheim, 1980). However, because it fails to provide explicit information as to what the student can or cannot do, its role should be limited in academic settings where content mastery is of primary importance (Glaser, 1963). Student ranking has little instructional relevance, and, consequently, norm-referenced testing has fallen by the wayside in the assessment world that seeks a more objectives-driven method to give the teacher and student a more clear idea of what is to be learned and tested (Lindheim, 1980).

Criterion-referenced Testing

Partly in an effort to overcome the weaknesses in norm-referenced testing and partly to improve instruction and student mastery of specific content knowledge, the idea of the criterion-referenced test was developed. Criterion-referenced tests are designed to indicate how well an examinee has performed, based on a specifically-defined set of objectives drawn from a particular body of content (Lindheim, 1980). Each question, or test item on a criterion-referenced test is written to correspond with a pre-stated criterion, or objective (Wong & Wong, 1998). The set of criteria for a particular learning unit represents a teacher's major and minor objectives, each with an inherent method of determining when a student has achieved it (The Center for Research on Learning and Teaching, 1976). Criterion-referencing was first introduced by Glaser, in 1963, to describe an individual's achievement, with regard to a particular body of content, as a position on a continuum or progression of developing competence (Masters & Evans, 1986):

Underlying the concept of achievement measurement is the notion of a <u>continuum of</u>

<u>knowledge acquisition</u> ranging from no proficiency at all to perfect performance. An

individual's achievement level falls at some point on this continuum as indicated by the

behaviors he displays during testing… The standard against which a student's

performance is compared when measured in (a criterion-referenced) manner is the

behavior which defines each point along the achievement continuum. (Glaser, 1963, p.

519-520)

The concept of criterion-referenced measurement was conceived to encourage the

development of procedures whereby assessments of proficiency could be referenced to

stages along <u>progressions of increasing competence</u>. (Glaser, 1981, p. 935)

Criterion-referenced measurement has been utilized and interpreted in many ways, and,

in most cases, Glaser's notion of a continuum of competence has been lost, in favor of a method

that develops checklists of skills that must be taught, assessed, and checked off when mastered

(Masters & Evans, 1986). Criterion-referenced assessment has become synonymous with the

"mastery-learning" approach (Brown, Young, & Chen, 1979). In the mastery method, a student

takes repeated tests on a unit of material until he has demonstrated a mastery level of the content

within the unit. Grades within this type of system are usually associated with the number of units

each student has "mastered". Students in mastery-oriented courses make-up for deficiencies by

performing remedial studies and reexamination, thereby creating the notion that tests are a

learning experience for the students, as well as an evaluation tool for the teachers (Brown, et al.,

1979).

Development of criterion-referenced tests is a time-consuming and labor-intensive process (Williams, 1979). However, due to its reliance on learning objectives, criterion-referenced assessment techniques have gained widespread acceptance (Gredler, as cited in Carlson, 2003). There are three steps that must be followed in the proper construction of criterion-referenced tests; the first, and most important, step, is the selection and writing of the learning objectives or skills that are to be measured (Lindheim, 1980). Central to criterion-referencing is the requirement that the test measures what the learner can do, with reference to some performance objective, which makes proper construction of these objectives imperative to the outcome and validity of the test instrument (Williams, 1979). In the selection process, each proposed objective should be carefully analyzed based on four criteria: scope (is it too big to be measured), worth (is it important enough to be included), assessability (does it lend itself easily to measurement), and instructability (does it lend itself easily to instruction) (Lindheim, 1980). Learning objectives that clearly incorporate the above characteristics are key to effective teaching and evaluation strategies (Carlson, 2003). The quality of selection, as well as the specificity and clarity in the writing, of these objectives is the most important feature in successful measurement using criterion-referenced assessment (Lindheim, 1980). Student mastery of content begins with clearly-stated objectives (Popham, 1998). When objectives are the basis for evaluation, the assessment system becomes more student-centered (Colby, as cited in Carlson, 2003). The writing of these objectives should include specific action verbs in order to describe the behavior that students will be required to demonstrate (Williams, 1979). Also, writing of clear objectives for the students, makes it easier for the teacher to provide instructional activities that specifically target learning that will be measured (Popham, 1998). Criterion-referenced testing, and its emphasis on objective writing, unifies and focuses the learning process

in ways that other assessment tools in the past failed to do (Popham, 1998). A final advantage to clear writing of objectives is that they allow teachers to assess the effectiveness of their instruction by finding if students had acquired the post-instruction behaviors defined in their learning criteria (Popham, 1998). Such information forces teachers to take more ownership in the success or failure of their students (The Center for Research on Learning and Teaching, 1976).

The second step in creation of criterion-referenced tests is the development of a separate set of test specifications, which are derived from each objective (Lindheim, 1980). Each test specification follows a routine format, and, in general, describes the rules for creating test items that can be shown to measure attainment of the specific objective (Lindheim, 1980). In the third step, test items are written that are congruent with the specifications laid out for each objective (Lindheim, 1980).

The criterion-referenced assessment has several primary advantages. First, it is shown to act as a quality control for both student learning and instructional effectiveness. Simply put, this type of testing consistently measures if the students have learned what was taught (Schmidt, 1983). Traditional testing methods, such as criterion-referenced testing, are more objective and identify strengths and weaknesses in a student's battery of knowledge and skills (Moore, 2003). Also, criterion-referenced tests provide a built-in mechanism for teachers to assess which students should receive remediation or enrichment work to build on their understanding of the content material (Wong & Wong, 1998). Another advantage of this type of assessment is that, in today's accountability-driven educational environment, it offers a way for teachers to demonstrate student progress and instructional effectiveness (Popham, 1998).

The primary disadvantages of criterion-referenced assessment relate to the types of knowledge students are asked to demonstrate. Traditional assessments, such as criterion-

referenced testing, only reveal whether students can recall out of context facts; they do not allow students to demonstrate a more complete understanding of their knowledge (Moore, 2003). Also, criterion-referenced tests are inefficient when comparisons between students are required (Williams, 1979). Because of the mastery focus associated with criterion-referenced testing, letter grades are more difficult to assign and are less meaningful, given that these tests are most useful for identifying students who have mastered the objectives, and those who need remediation before moving on to the next unit (Williams, 1979). A final criticism of this type of assessment, which reflects movement away from Glaser's notion of a competency continuum, is that the checklist approach can fragment a teacher's curriculum into loose, or unconnected, bits of knowledge, or skills. This fragmentation can interfere with students' logical understanding of the material, as a whole (Masters & Evans, 1986).

Performance-based Assessment

The two previously described methods of assessment are now commonly referred to as "traditional" methods, while the performance-based assessment method represents the "new" or modern thinking along the continuum of assessment. Performance-based assessments clearly occupy the high ground in current educational research (Ohlsen, 2007). This method came about as a result of a call to develop new ways to assess students' mastery of concepts and complex-thinking skills, rather than simply content knowledge (Craig, 1993). Performance-based assessment draws heavily from Kohn's (1994) grading inquiry level two, and its emphasis on looking for ways to provide a richer, deeper description of student achievement. There is a sharp distinction in the mindset of these "new" types of assessment from the more traditional methods; performance-based assessment focuses on what students ought to be able to do and what will be demanded of them to do, but also on what we can do to support the student's development and

help them learn (Kohn, 1994). With this change in focus came a new definition of learning that contrasts sharply with looking at learning as the acquisition of skills necessary to complete objectives. In this new perspective, learning can be defined as the "process by which learners selectively experience elements of their own and novel worlds, conceptualize and assimilate symbols and relationships around problems they understand, and ultimately construct or at least interpret knowledge and its meanings in ways that are their own" (Gordon & Bonilla-Bowman, 1996, p. 33). The role of teachers is to provide students with opportunities to work toward becoming critical thinkers, with appreciation for multiple perspectives, who will use their skills to solve everyday problems with which they come in contact (Moon, 2002). These "constructivist" ideas state that students learn best when they are actively engaged, rather than in a passive learning mode, are able to relate new learning with old, have clear statements of objectives, and realize that their learning and skills directly impact, and are transferable to, all types of new situations (Bransford, Brown, & Cocking, 1999). Performance-based assessment represents a move in educational philosophy toward a more "student-centered" approach that views assessment as more than merely test scores or grades, but asserts that more can be learned about student achievement and teacher effectiveness by observing student behavior (Kohn, 1994). The above principles form the basis for performance-based assessment (Moon, 2002).

Performance-based assessment differs from traditional tests in that students are not asked to answer questions that are drawn from "discrete, isolated facts" (Craig, 1993, p. 63). Students, rather, are asked to demonstrate knowledge by creating products that demonstrate their knowledge and skills (Craig, 1993). Products of performance-based assessment include numerous examples of student work such as projects, student performances, questioning sessions, cooperative learning activities, and journal entries (Mulder, 1994). Student work is

usually collected in a portfolio that is designed to assess achievement across a broad array of skills and perspectives, and which gives opportunities for students to display their diverse talents and abilities, i.e., multiple intelligences (Perkins, 1993). Parker recommended that there are several attributes for effective and useful performance assessments:

1.   Tasks that go to the heart of essential learnings by asking for exhibitions of understandings and abilities that matter.

2.   Tasks that resemble interdisciplinary real-life challenges, not schoolish busywork that is artificially fragmented and easy to grade.

3.   Tasks that set standards, for they point students toward higher, richer levels of knowing.

4.   Tasks that are worth striving and practicing, and

5.   Tasks that generally involve a higher-order challenge for which students have to go beyond routine use of previously learned information. (Parker, 1991, p. 45)

The final element of performance-based assessments is the use of a grading rubric which clearly defines for students what is required for their work to meet the specific grading criteria (Moon, 2002).

The primary advantages of performance-based assessment can be grouped into the category of the type of learning that they promote and assess, what Craig calls the "kind of learning that teachers want to teach" (Craig, 1993, p. 64), and their effect on student motivation. Performance assessments require students to demonstrate a synthesis of their knowledge, understanding, and skills that often utilize multiple disciplines to achieve (Moon, 2002). They also better stimulate and assess multiple intelligences that different students bring to the classroom (Mulder, 1994). In short, these types of assessments, by engaging students in

comparing, contrasting, summarizing, and predicting, teach and evaluate the types of thinking found in the real world. (Moon, 2002). One study of secondary science students reported that many students stated a preference for alternative assessments because of motivation factors such as increased choice and creativity in alternative projects (Waters, 2004). These students also reported greater feelings of accomplishments in that the performance projects gave them a sense of having worked harder and learned more than with traditional tests (Waters, 2004). This corresponds with findings from a Brookhart and Durkin study in high school social studies classes where students reported being more motivated by performance assessments than paper-and-pencil tests (cited in Arends, 2007). Students reported expending more mental effort and trying harder, and, reported that they wanted to learn more for learning's sake (Arends, 2007). The possible connection with motivation and student ownership and performance assessment justifies the current research interest in the subject (Arends, 2007).

Several primary disadvantages have cropped up in recent literature regarding performance-based assessment. Teachers appear hesitant to utilize this strategy because they have little confidence in their ability to implement the methodology of new types of assessment (Cooney, Bell, Fisher-Cauble, & Sanchez, cited in Ohlsen, 2007; Airasian, cited in Ohlsen, 2007). One study found that 40% of science teachers reported that they were unprepared for the development of performance-based assessments (Weiss, cited in Waters et al., 2004). Much of this lack of confidence stems from previous failed attempts (Stiggins, cited in Ohlsen, 2007). Performance-based assessments also take more time to plan, complete, and score than traditional assessments (Marzano, cited in Ohlsen, 2007). These disadvantages, especially the increased amount of time involved, can be a major detriment to teachers and administrators who so often focus on content coverage associated with today's emphasis on high-stakes testing (Cooney, et

al, cited in Ohlsen, 2007). Also, educators have become aware of the difficulty in translating performance-based assessments into appropriate grading practices (Carlson, 2003). Issues such as blanket grading of groups, confidentiality, peer-grading, subjectivity, and differentiation are all practices whose solutions are only beginning to be examined by research to determine best practices (Carlson, 2003). There is a gap in the performance-based assessment literature in that it does not deal with negative aspects of utilizing this type of assessment, or does not offer quantitative evidence that performance-based assessment improves content knowledge any better, or deters from it than more "traditional" types of testing.

Conclusion

The purpose of this review was to discuss the major types of assessment that are currently in use in our educational system, and provide information about the rationales, methods, benefits, and disadvantages associated with each. The type of assessment that best fits a given situation depends on a variety of factors including philosophy and rationale for grading, the type of knowledge that is to be assessed, and the teacher's personal views about the nature and purpose of education.

Data Collection and Results

Data Collection

Participation

This study was conducted in an eighth-grade, United States history classroom. There were two groups of students participating in the study concurrently for one unit of instruction, lasting approximately 2 weeks. Each group consisted of an entire heterogeneous classroom. One class consisted of 20 students and the other consisted of 24, for a total student population of 44 students. There were members of each class who decided not to participate and no data was

collected from those individuals. There was no attempt to group students by ability, as the focus of the study was based on improvement scores from pre- to post-test results. The focus of the research was on which type of assessment method would produce the greatest sustained retention of content material following the unit of instruction. Again, the purpose was not to measure performance on the particular assessment instrument (criterion-referenced and performance-based) given to each group, but, rather, to assess sustained content retention as demonstrated in scores from the pre- and post-test.

Design

Identical curriculum and teaching methods were delivered to all groups in the same manner by the same teacher. Each group received both student- and teacher-centered lesson strategies. The researcher also incorporated literacy skills into lessons to help improve the performance of struggling readers. The researcher incorporated numerous cooperative learning activities, as well as lecture and discussion, into the unit. Every effort was made to deliver differentiated and effective instruction for all students, including diverse learners and students with special needs.

The only varying factor within the study was the assessment method (criterion-referenced or performance-based) given to each group at the end of the instructional unit. The scores on the end of unit assessments (criterion-referenced or performance-based) are not included in the results of the study. Data regarding sustained retention from each group was collected and interpreted from improvement scores from the pre-test to the post-test.

Group A, the criterion-referenced testing group (referred to as CRT), was given a mixed, "traditional" assessment tool. Each question given to Group A was referenced to a pre-instructional learning objective. Each objective was clearly marked on the assessment instrument

using the number and section of each criterion. Scores were reported based on percentage of correct answers, with the mastery level set at 85%. Students were given an opportunity following the test to review their answers and relate them to the objectives. Students who did not meet the mastery level performed remedial activities in those areas in which the test showed them to be deficient. In this way, the test was used as a feedback instrument for the student to help him or her achieve the mastery of the content. Students who performed above the necessary percentage were given enrichment activities to extend the knowledge of the subject matter. Students who did not achieve mastery were given a second assessment (likewise, criterion-referenced) to aid them in achieving mastery level of the content.

Group B, the performance-based assessment group, (referred to as PB A) was asked to demonstrate the knowledge required by the learning objectives by producing a performance task. Because the literature regarding the effects of incorporation of student choice on motivation is so compelling, the students were allowed to select from three choices of projects, and complete one to serve as the culminating activity for the unit. Students were given a choice over group or individual work, as well as the type of product to be demonstrated. Student performances were assessed by a pre-designed rubric that allowed the students to know what type of work was considered excellent, considered satisfactory, or needing improvement. The rubric was shared with the class at the beginning of the unit so that work could be completed with the standards of the end-product in mind. Effort was made to extend the student learning beyond factual recall by asking students to demonstrate higher order thinking skills in the performance products. Student work was assessed for:

- Accuracy of content information associated with learning objectives.

- Creativity and originality relevant to the unit topic.

- Neatness, clarity, and focus of the written component of the project.

- Quality of the oral presentation component of the project.

In addition to the group pre- and post-testing, other data collection techniques were utilized to give a more complete picture of the assessment comparison that is the focus of this study. Included in these methods were student surveys within the researcher's school concerning attitudes and opinions about the various methods of assessment, and the content, itself. These techniques will be discussed more fully in the next section.

The primary method of data collection was quantitative in nature. The study's primary purpose is to compare two popular assessment methods to determine which type is more proficient at promoting student content retention after assessment has taken place (a worthy goal, considering modern educational emphasis on end-of-course and standardized testing designed to both assess student content retention and teacher effectiveness). Assessment results from the various testing mechanisms, alone, seem insufficient in describing actual content retention because of the many variables, described earlier, that could affect student performance on such instruments. Therefore, the results from the different testing mechanisms were not directly used as part of this study. The quantitative data collection technique used to measure content retention by students was the comparison of individual student and composite class improvement scores on a pre- and post-test (see Appendix A) of the content on which the instructional unit was based. The pre- and post-assessments were multiple-choice in format, as are the standardized tests that are used to assess the students in high-stakes, state testing, and were designed to give an accurate depiction of knowledge about the subject matter covered in the instructional unit, as represented in the learning objectives presented to the students. Pre- and post-test results from

Groups A and B were compared to determine which produced greater retention of the subject material within the student groups.

Other qualitative methods of data collection were utilized by the researcher to gain a more complete picture of student attitudes toward content and assessment. Students from each group were given two questionnaires, one pre-instruction to assess attitudes about the subject matter and previous educational experience (see Appendix B), and, the other, post-instruction to measure student attitudes about the assessment method used with their group (see Appendix C). This is important information because student attitudes and motivations are key factors in student learning and achievement, and play integral roles in the success of any particular assessment method.

Results

Pre- and post-tests were administered to Groups A and B. Each question was referenced to a unit learning objectives that the students would be expected to master. The learning objectives were derived from Tennessee State Content Standards and Performance Indicators for eighth-grade social studies. Careful consideration was also given to ensure that the answer to each question was a key theme that was to be covered in the unit of study. Every attempt was made to avoid trivial material in construction of the questions.

Results of the pre-assessment showed a correspondingly low amount of prior knowledge about the subject material in both groups. The criterion-referenced group had 20 students whose mean score on the pre-test was 27.25%, an average of 5.46 correct answers out of 20 questions. The performance-based group had 24 students whose mean score on the pre-test was 25.63%, an average of 5.13 correct answers out of 20 questions. As a result of the low amount of demonstrated prior knowledge, the researcher decided to cut some of the planned material and

spend more time scaffolding knowledge in review and remediation to, hopefully, generate more successful mastery of the desired content. The amount of material removed from the original unit plan equaled approximately 20 percent.

Results of the post-assessment showed that the majority of students in both groups failed to achieve mastery of the instructional material. However, the data shows that a vast majority of students did achieve improvement in content knowledge as represented on the post-test. The pre- and post-test scores of the criterion-referenced group are presented in Figures 1 and 2.

Results: CRT Group

	Pre-Test	Post-Test
Mean	27.25	51.25
Median	25	47.5
Mode	25	35
Std. Dev.	12.08	16.69

Figure 1. Comparison of pre- and post-test scores of the CRT group.

Figure 2. Graphic per student comparison of CRT group pre- and post-test scores.

Mean scores for Group A rose to 51.25%, for a total improvement of 24% over pre-test

scores. The median rose from 25% to 47.25%. The mode remained low and showed only a 10%

gain. Standard deviation was higher on both tests for Group A, and increased from the pre-test to

the post-test. The high standard deviation indicates greater variability on the scores of this group

than in Group B.

The pre- and post-test scores of the performance-based group are presented in Figures 3
and 4.

Results: PBA Group

Student	Pre-Test	Post-Test
Mean	25.625	53.75
Median	25	55
Mode	35	55
Std. Dev.	9.36	9.70

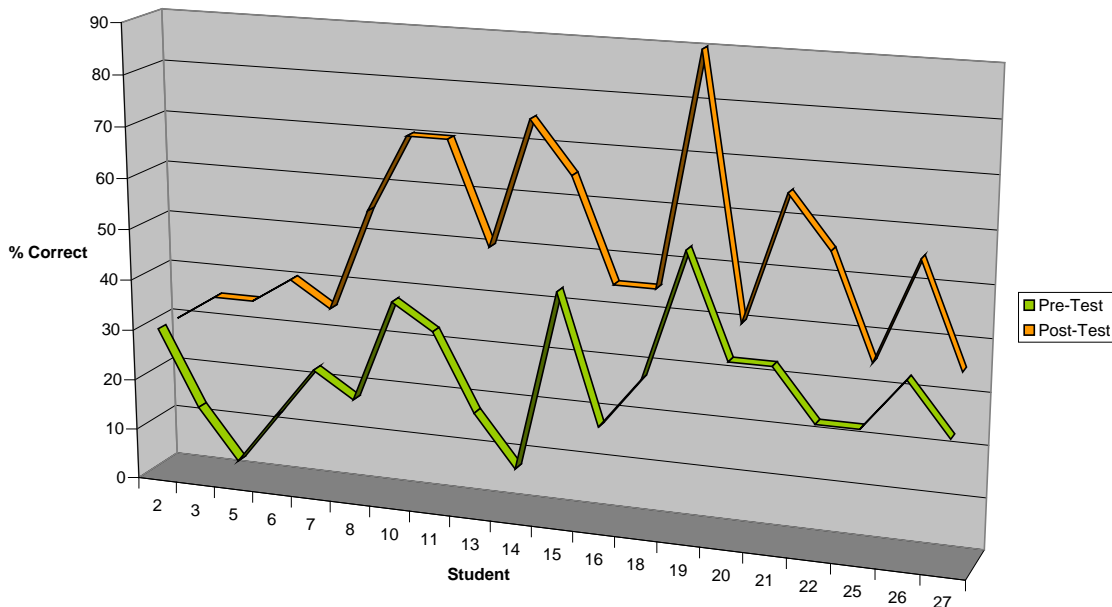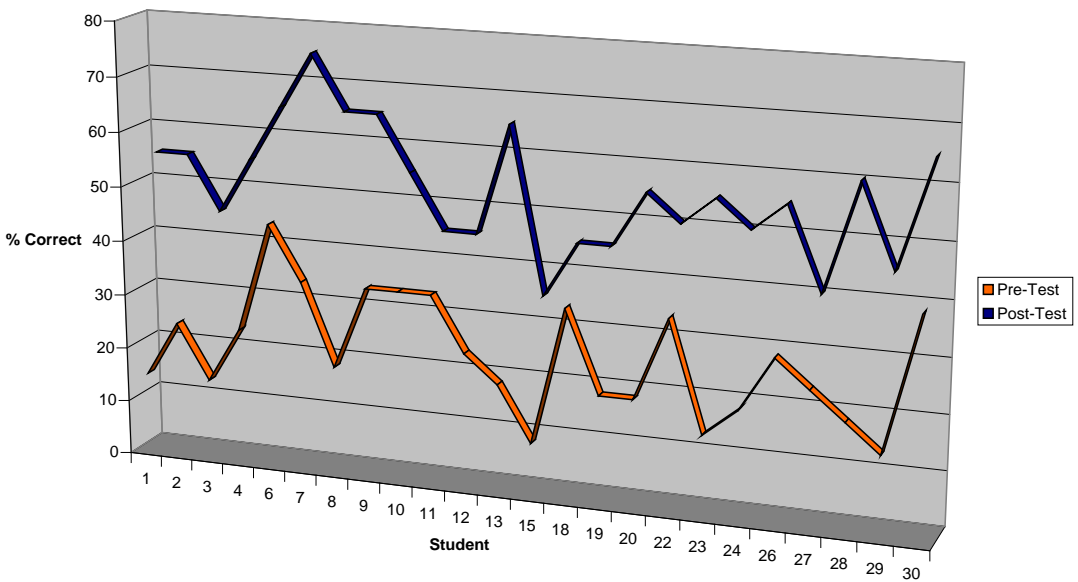*Figure 3.* Comparison of pre- and post-test scores of the PBA group.

Figure 4. Graphic per student comparison of PBA Group pre- and post-test scores.

Mean scores for this group rose to 53.75%, for a total improvement of 28.13% over pre-test scores. The median rose from 25% to 55%. The mode showed greater improvement than in Group A, with a 30% increase. Also, the standard deviation remained consistently lower for this group, over the pre- and post-assessments, indicating that, in general, a greater number of students performed more in a similar manner than in the criterion-referenced group. The mean improvement of the performance-based group was 4.13% higher than that of the criterion-referenced group (see Figure 5).

Comparison of Improvement Scores				
CRT Group Testing		PBA Group Testing		Difference
Mean	24.00	Mean	28.13	+4.13%
Median	25.00	Median	30.00	
Mode	30	Mode	30	
Std Dev.	14.29	Std Dev.	10.30	

Figure 5. Comparison of improvement data between CRT and PBA groups.

The results show higher quantitative gains on the part of the performance-based group in areas such as overall mean scores, improvement in mean scores, and higher median and mode scores, and lower standard deviation across all scores.

Results of the attitudinal surveys given to the students are also informative. For both surveys, the researcher used a Likert scale instrument. Frequency distribution scoring is displayed in Figure 6.

Likert Scale	
1	Strongly Disagree
2	Moderately Disagree
3	Agree
4	Moderately Agree
5	Strongly Agree

Figure 6. Scoring scale used for interpretation of all student survey data.

All 44 test takers participated in a survey of the students' attitudes toward the subject of history, their prior experiences with the subject and their overall attitudes about school. The results are shown in Figure 7.

History Attitudes Survey		
Statements Tested	Mean	Std. Dev.
I liked/enjoyed the history classes that I have taken so far.	3.19	0.59
History is my favorite subject.	2.07	0.26
The history classes I have taken so far have been boring.	2.67	0.31
The history teachers I have had so far have been interesting.	3.58	0.62
I feel like I have learned something in the history classes I have taken.	3.70	0.75
I think I should never have to take another history course.	2.33	0.20
History is just one thing after another. I hate learning all those dates and facts.	2.23	0.40
I like school.	2.65	0.22

Figure 7. Mean and standard deviation results for all respondents to the history attitudes survey.

The results of the history survey showed a general affinity for the subject of history, although few characterized it as their favorite subject. Most respondents felt the classes in which and the teachers with whom they had been with were interesting. Furthermore, respondents indicated that they had learned from those experiences and would like to take other courses in the subject. The attitude toward school showed a slightly less positive correlation than did questions about the subject of history. The attitudinal survey about history revealed that the students had few biases toward the subject and that they had, overall, positive feelings about the class. It can be assumed from the information gathered from this survey that prior attitudes toward the subject of history had a neutral or slightly positive effect on student performance on the pre- and post-tests, and was not a significant variable, as discussed earlier.

The students from each group also participated in a post-assessment survey designed to obtain information about attitudes and feelings toward the particular type of assessment that they were given. Again, the Likert Scale described above was utilized for analyzing the results of these surveys. The results of the surveys are shown in Figures 8, 9, and 10.

CRT Group Assessment Survey		
Statements Tested	Mean	Std. Dev.
I liked the kind of test/assessment I was given.	2.65	0.38
I learned more doing this test/assessment than I normally do.	2.5	0.44
The objectives for this test/assessment helped me do better.	2.7	0.32
This test/assessment was easier than the tests I am used to.	3.25	0.50
I worked harder for this test/assessment than I normally do.	2.7	0.36
This test/assessment allowed me to show what I know.	2.95	0.46
I would like to do this test/assessment every time.	2.15	0.26
This test/assessment was fun.	2.4	0.28

Figure 8. Results of the CRT group responses to the assessment attitudinal survey.

PBA Group Assessment Survey		
Statements Tested	Mean	Std. Dev.
I liked the kind of test/assessment I was given.	3	0.62
I learned more doing this test/assessment than I normally do.	3.09	0.51
The objectives for this test/assessment helped me do better.	3.22	0.52
This test/assessment was easier than the tests I am used to.	3.35	0.48
I worked harder for this test/assessment than I normally do.	2.83	0.38
This test/assessment allowed me to show what I know.	3.43	0.59
I would like to do this test/assessment every time.	3	0.40
This test/assessment was fun.	3.13	0.43

Figure 9. Results of the PBA group responses to the assessment attitudinal survey.

Composite Assessment Survey	CRT		PBA		PBA
Statements Tested	Mean	Std. Dev.	Mean	Std. Dev.	Advantage
I liked the kind of test/assessment I was given.	2.65	0.38	3	0.62	+0.35
I learned more doing this test/assessment than I normally do.	2.5	0.44	3.09	0.51	+0.59
The objectives for this test/assessment helped me do better.	2.7	0.32	3.22	0.52	+0.52
This test/assessment was easier than the tests I am used to.	3.25	0.50	3.35	0.48	+0.10
I worked harder for this test/assessment than I normally do.	2.7	0.36	2.83	0.38	+0.13
This test/assessment allowed me to show what I know.	2.95	0.46	3.43	0.59	+0.48
I would like to do this test/assessment every time.	2.15	0.26	3.00	0.40	+0.85
This test/assessment was fun.	2.4	0.28	3.13	0.43	+0.73

Figure 10. Comparison of the group responses to the assessment attitudinal survey.

The responses of the criterion-referenced group were less positive on each question than the members of the performance-based group. Students indicated that they felt they learned more, worked harder, and were better able to demonstrate their learning on the performance assessment than on traditional assessments that they were normally given in their classes. The performance-based group also indicated that the performance assessment would be their choice for all units of study in the future, and that they were fun to complete. These two questions yielded the lowest responses from the criterion-referenced group.

Conclusions and Recommendations

Conclusions

The results of the study showed a larger increase in content retention in the performance-based assessment group than in the criterion-referenced group. When content retention is coupled with the results of the attitudinal surveys given to each group, the results point to a positive trend for the utilization of performance-based assessments and increased learning. The

conclusion of this study is consistent with findings previously discussed in the review of literature on the subject. The survey results show that the students preferred the performance tasks to the more traditional form of testing, which is positive, given the possible role of student attitudes and motivation on increased learning (Arends, 2007). The results of this study, therefore, favor the increased inclusion of performance-based assessments in the repertoire of teachers who are concerned about increasing content retention of their students.

However, given the documented benefits described earlier, and the continued prevalence of standardized testing for evaluating student achievement, it is the opinion of the researcher that traditional testing methods must continue to play a role as a part of a well-balanced plan of curriculum development, instructional planning, and assessment strategies. Traditional methods of assessment provide objective and reliable methods for measuring learning relating to specific knowledge and skills. Also, for the foreseeable future, it is important that students be given practical experience, and learn real strategies to help them succeed on traditional assessment instruments, to help ensure that they will be prepared for high-stakes testing mechanisms.

The National Council for the Social Studies (NCSS) issued a position statement, entitled "Curriculum Guidelines for Social Studies Teaching and Learning," which is supported by the findings of this study. The position statement says that an effective social studies curriculum program should be assessed using both traditional and alternative methods (NCSS, 2008). The statement encourages not only assessing factual knowledge, but also skills of thinking, valuing, and social participation (NCSS, 2008).

Recommendations

As mentioned in the introduction, the researcher continues to believe that assessment techniques, both formative and summative, may have an effect on student content retention and

that this area bears further research. From the researcher's own experience, assessment issues and techniques are underrepresented in the teacher preparation process at the university level. The researcher would recommend intensive professional development within school systems to help bridge the gap of knowledge that exists about assessment. Increased training in proper assessment construction, implementation, and interpretation could significantly improve both student learning and pedagogical practice. Assessment is irrevocably linked to curriculum development and instructional strategy, and must receive as much attention in preparation and training as do those two items. Assessment, as a part of a larger instructional system, boils down to the following questions:

1. Have we taught what we want them to know.

2. Do they know what we want them to know; can they prove that they know it?

3. Improved training in assessment techniques would go a long way toward answering those questions in the affirmative.

The researcher was unable to locate any grant money currently available for further inquiry into the topic of this study. The researcher feels that further action research, conducted by educators, into best practices of assessment would be a beneficial endeavor. Useful insight can be gained on planning and instructional practices that can significantly improve pedagogic effectiveness.

The researcher has a strong belief that increased use of technology will have a tremendous impact on improving student performance and student learning. "A combination of traditional and alternative assessment techniques with the infusion of technology needs to be incorporated into the curriculum and both should be used in measuring the competency of students" (Moore, 2003, p. 26). Technology, mixed with alternative assessment methods, gives

students with diverse abilities and multiple intelligences increased opportunities and avenues to demonstrate their learning (Moore, 2003). Technology can help improve student achievement in many ways, such as increasing motivation, cooperative learning, multiple assessment mechanisms, broader opportunities for professional development, making research-based instruction easier, increasing parental and community involvement, locating funding sources, and increasing resources for curriculum and instructional development (Conner, 2002).

As an extension of the project, the researcher would like to conduct the comparison of assessment methods with the same group of students over a variety of instructional units that cover several different curriculum components. Doing so would further reduce the variability within the study and would give more time to factor in numerous instructional techniques.

Another extension of this project would be to conduct this study among more homogenously grouped students, such as a group of high achievers, or a group of lower achievers, to determine if there is a correlation to a particular assessment method, and its success with different groups of students. The curriculum could be modified to ensure that the needs of the target group were being met. The researcher feels that this could be valuable information to provide to colleagues about best practices, with regard to assessment of students homogenously grouped, according to ability level.

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Appendix A

Semper Res Publica

Discovery Challenge

Directions: Choose the letter of the *best* answer and write the letter in the blank provided.

_____ 1. What did the Federal Judiciary Act of 1789 help create?   (I-I; II-A1)

A. a federal court system
B. the president's cabinet
C. the State Department
D. the Treasury Department

_____ 2. Which of the following set precedents for the executive branch of government?   (II-A1)

A. George Washington
B. Alexander Hamilton
C. Edmund Randolph
D. Thomas Jefferson

_____ 3. Why did Alexander Hamilton believe the nation needed to pay its debts?
                                                                              (II-A2)
A. It would allow the government to strengthen its military.
B. It would encourage other countries to do business with the United States.
C. It would help him eliminate the need for a national bank.
D. Nations that had made loans threatened to go to war with the United States.

_____ 4. Under Hamilton's plan, the main source of government revenue was
                                                                              (II-A2)
A. income taxes.
B. tariffs.
C. donations.
D. interest from loans.

_____ 5. Which of the following statements *most* accurately describes Hamilton's financial policies*?*   (II-A2)

A. Hamilton thought state governments should be more powerful than the federal government.
B. Hamilton wanted the states to run the national bank.
C. Hamilton thought states ought to pay their own debts from the American Revolution.
D. Hamilton believed the federal government should have a strong role in determining economic policies.

_____ 6. Which of the following encouraged Americans to buy American-made goods? (I-O; II-A2)

A. high interest rates
B. national banks
C. public debt
D. tariffs on imports

_____ 7. Which of the following, used by supporters of Hamilton's economic plan represented a loose construction of the Constitution? (II-A3)

A. first amendment
B. elastic clause
C. appointment of Supreme Court Justices
D. federal reserve clause

_____ 8. One who favors strict interpretation of the Constitution would most likely support (II-A3)

A. the creation of a national bank.
B. a powerful system of federal courts.
C. the states' rights theory as outlined in the 10th amendment.
D. the "Elastic Clause."

_____ 9. What caused the Whiskey Rebellion? (I-R; II-B1)

A. Farmers did not want to pay a tax on the whiskey they made.
B. Merchants wanted to be able to sell whiskey in saloons.
C. Settlers in the Northwest Territory attacked Native Americans.
D. France declared war on Britain, Holland, and Spain.

_____ 10. The Native Americans' defeat at the Battle of Fallen Timbers led to what? (II-B1)

A. The Native Americans expected aid from the French but didn't get it.
B. Establishment of precedent for future US Federal Indian policy.
C. With the aid of a British army, the Native Americans were made Canadian citizens.
D. The other chiefs replaced Little Turtle with "Mad Anthony" Wayne.

_____ 11. Under the Treaty of Greenville, (I-Q; II-B1)

A. Native Americans will receive no protection from the U.S. government.
B. Native Americans cannot hunt or plant on their land without permission from the U.S. government.
C. Native Americans will be compelled by the U. S. Government to allow white settlement on their land.
D. Native Americans agreed to cede much of present-day Ohio and other areas to the U.S. Government.

_____ 12. How did Pinckney's Treaty make it easier for Trans-Appalachian settlers?

(I-U; II-B1)

A. It allowed improvements to the road that led to Kentucky.
B. It gave settlers in the Northwest Territory the right to use the Great Lakes.
C. It gave settlers the right to use the Mississippi River and port of New Orleans.
D. It declared that all bodies of water were free for navigation.

_____ 13. In 1793, George Washington declared that the United States would remain neutral in the   (II-B2)

A. battle for lands near the Ohio River.
B. fight for Native American lands.
C. war between France and Britain.
D. Spanish revolution.

_____ 14. Why did Washington advise the nation to remain neutral in world affairs?

(II-B2)

A. Agreements with foreign nations might work against U.S. interests.
B. He believed the United States should be economically independent.
C. The U.S. army consisted of part-time emergency volunteers.
D. The nation should focus on gaining territory and building colonies.

_____ 15. What did "Jay's Treaty" accomplish?   (I-T; II-B2)

A. Native Americans sold some of their lands to the United States.
B. Spain allowed American traders to use the port of New Orleans.
C. The northern boundary of Florida was established.
D. Britain paid damages for U.S. vessels it had seized.

_____ 16. The opposing views of Hamilton and Jefferson were later the basis for

(II-C1)

A. political parties.
B. civil war.
C. the separation of powers.
D. constitutional amendments.

_____ 17. Jefferson and Madison founded the   (I-H; II-C1)

A. Electoral College.
B. Federalist Party.
C. Democratic-Republican Party.
D. Green Party.

_____ 18. The first two political parties in the United States were the   (II-C1)

A. Democrats and the Republicans.
B. Patriots and the Loyalists.
C. Federalists and the Democratic-Republicans.
D. Federalists and the Anti-Federalists.

_____ 19. How are Pinckney's Treaty and Jay's Treaty related?   (I-T; I-U; II-B1)

A. Both agreements helped reduce frontier tensions.
B. Both agreements angered western settlers.
C. Both were agreements between the United States and Spain.
D. Both were agreements between the United States and Britain.

_____ 20. Based on Washington's view of political differences, what would his opinion of political parties be?   (II-C1)

A. Political parties were needed for presidential elections.
B. Political parties made issues clearer for the voters.
C. Political parties would divide Americans into enemy camps.
D. Washington was a strong supporter of the Federalists.

Appendix B

Student Opinion Survey
History Attitudes

Directions: *Circle the statement that most accurately reflects your feelings about the sentence.*

1.   I liked/enjoyed the history classes that I have taken in my school career so far.

Strongly Disagree   **Moderately Disagree**   **Agree**   **Moderately Agree**   **Strongly Agree**

2.   History is my favorite subject.

Strongly Disagree   **Moderately Disagree**   **Agree**   **Moderately Agree**   **Strongly Agree**

3.   The history/social studies classes I have taken so far in my school career have been boring.

Strongly Disagree   **Moderately Disagree**   **Agree**   **Moderately Agree**   **Strongly Agree**

4.   I feel like the history/social studies teachers I have had so far in my school career have been interesting.

Strongly Disagree   **Moderately Disagree**   **Agree**   **Moderately Agree**   **Strongly Agree**

5.   I feel like I have learned something in the history/social studies classes I have taken so far in my school career.

Strongly Disagree   **Moderately Disagree**   **Agree**   **Moderately Agree**   **Strongly Agree**

6.   I think that I should never have to take another history course because there is no reason for it.

Strongly Disagree   **Moderately Disagree**   **Agree**   **Moderately Agree**   **Strongly Agree**

7.   History is just one thing after another. I hate learning all those dates and facts.

Strongly Disagree   **Moderately Disagree**   **Agree**   **Moderately Agree**   **Strongly Agree**

8.   I like school.

Strongly Disagree   **Moderately Disagree**   **Agree**   **Moderately Agree**   **Strongly Agree**

Appendix C

Student Opinion Survey
Assessment Attitudes

Directions: *Circle the statement that most accurately reflects your feelings about the sentence.*

1.   I liked the kind of test/assessment that I was given.

Strongly Disagree   **Moderately Disagree**   **Agree** **Moderately Agree**   **Strongly Agree**

2.   I learned more doing this test/assessment than I normally do.

Strongly Disagree   **Moderately Disagree**   **Agree** **Moderately Agree**   **Strongly Agree**

3.   The objectives for this test/assessment helped me do better.

Strongly Disagree   **Moderately Disagree**   **Agree** **Moderately Agree**   **Strongly Agree**

4.   This test/assessment was easier than the tests I am used to.

Strongly Disagree   **Moderately Disagree**   **Agree** **Moderately Agree**   **Strongly Agree**

5.   I worked harder for this test/assessment than I normally do.

Strongly Disagree   **Moderately Disagree**   **Agree** **Moderately Agree**   **Strongly Agree**

6.   This test/assessment allowed me to show what I know.

Strongly Disagree   **Moderately Disagree**   **Agree** **Moderately Agree**   **Strongly Agree**

7.   I would like to do this test/assessment every time.

Strongly Disagree   **Moderately Disagree**   **Agree** **Moderately Agree**   **Strongly Agree**

8.   This test/assessment was fun.

Strongly Disagree   **Moderately Disagree**   **Agree** **Moderately Agree**   **Strongly Agree**

Wired for Science: Sparking an Interest in Science and Careers in Science
in Elementary School Students

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Introduction to the Problem

Many kids are masterful at using Mp3 players, cell phones, and playing videogames. They can download music, upload pictures, send text messages in record speed, e-mail, surf the Web, and reach levels on video games that adults rarely get to enjoy. They are a technologically savvy generation. However, according to the 2007 Trends in International Mathematics and Science Study (TIMMS) and a report by the National Science Teachers Association (NSTA), science test scores have not increased since 1995, and science has taken a back seat to reading and math due to the requirements of the *No Child Left Behind Act* (NCLB) (NSTA, 2009).

The purpose of this action research project is to discover what types of attitudes and knowledge students have about science and science careers, in general. The researcher seeks to discover if there is a correlation between science instruction that is rich with applications that are relevant to the student's everyday life, interesting guest speakers, hands-on activities, science-related career education, and an increase in student's appreciation for, and interest in, science and science related careers. The goal of the research is to increase the knowledge base of available careers, cause the students to gain an increased interest in studying science, now and in the future, and increase the students' knowledge of the importance of science to everyday life.

Review of Literature

While researching ways to increase knowledge and understanding of the value of science and science careers of elementary school students, I discovered two common threads among the writers: the time to teach science is of major significance, and the importance of making science relevant to the student's daily life. According to Williams, in order to attract students to science, educators must make science interesting and relevant to students by clearing up misconceptions that they may have about scientists as only technical experts (Williams, 1997). In the book,

Science for All Children: A Guide to Improving Elementary Science Education in Your School District, the authors suggest that science class materials should be able to stimulate the students' interest and relate science learning to daily life (Center for Science, Mathematics, and Engineering Education, 1997).

An alarming trend in elementary classrooms is the reduction, and, sometimes complete lack of time dedicated to teaching science. Elementary grades have reduced instructional time for science due to the increased demand for time in language arts and math. According to NSTP Executive Director, Francis Eberle, over the last 10 years, many K-6 classrooms have eliminated science class (NSTA, 2009). After being placed in an elementary school for my first student teaching placement, I find this to be true. The fourth-grade classroom that I am in schedules 45 minutes per day for science. However, due to interruptions, assemblies, and breaks between classes, there is rarely more than 30 minutes spent on science. If time is taken away from reading or math, it is made up by skipping science. Some of the other fourth- and fifth-grade teachers teach science only half of the year. It is left up to the classroom teachers to make wise use of the time that they do have in order to teach science. Some of the suggestions that can help teachers accomplish this are overlapping disciplines, outdoor science homework, remove wasted class time, reduce interruptions, and using a science specialist (Olson, 2008).

In order for students to become interested in a certain careers, they must learn about different types of people and jobs. It is important for children to begin to connect what they learn in school to what they will do as adults. In his article, "Improving the Teaching of Science: An Overview of Recent Research," Nigro explains that making science class "interesting, challenging, and meaningful" is the way to encourage students to think about a career in science (Nigro, 1987, p. 11). Career education has always been an important part of the school system.

Frehner explains that education is made relevant to the learner by incorporating career education. He goes on to say that elementary school students should be "systematically exposed to, and experience, those types of educational experiences that make them aware of the world of work, our society, and of themselves in relation to the home, the school, the community, and the workplace" (Frehner, 1974, p. 1-2). Even though this article was written over 30 years ago, it is still relevant to science education today. While researching the effectiveness of bringing a guest speaker that works in a science-related career into the classroom, I came across a project called ReSET (The Retired Scientists, Engineers and Technicians Program). According to the National Assessment of Educational Progress (NAEP), and reported by Stark, students become less interested in science as their K-12 education progresses, and only a few become interested in science related careers. Positive changes have occurred in the students after a speaker from ReSet has visited the classroom (Stark, 2007). If a school system cannot afford to have a science specialist as one article suggested, science teachers can utilize volunteers in the community to inspire their students. Vasquez, a member of the National Science Board, suggests that students will not look for careers in, or do well in, a subject to which they have not had exposure or understand due to the lowering of eliminating or science education in our elementary classrooms. Vasquez lays the responsibility on the teacher by saying, "Whatever grade you teach, as a teacher and a role model you are a key player in shaping the next generation of scientists, mathematicians, and engineers who will be responsible for the future innovations of this country" (Vasquez, 2005, p. 10).

Data Collection and Results

Data Collection

Subjects

The participants in this study will be in a fourth-grade class in a rural elementary school in Coffee County. There are approximately 250 students enrolled in the school; 90% are Caucasian, 2% are African-American, and 8% are Hispanic. There are 19 students in the classroom where I am assigned; 8 are girls and 11 are boys. Two students go to a special education classroom in the morning and return for social studies and science.

Methodology

The pre- and post-survey of science attitudes and knowledge is contained in Appendix A.

Instructional Plan and Leadership

Since this action research project was done during my student teaching placement, I taught science for 3 full weeks. The classroom teacher instructed me to carry on with the upcoming unit from the regular science class textbook on forces of motion and energy, and then I could select from the past Tennessee state standards as a review. The survey was given to the students that had returned permission letters and signed student consent forms before I began the unit. The most important aspect of the instructional plan was to do everything in my power to dedicate 45 minutes per day to science education. The general plan for the 3 weeks was to present the material and add an everyday life component and a career component to each lesson. Specifically, I used the textbook, materials acquired from a science methods class, Internet sources, and other resources to plan lessons. In order to incorporate the everyday life component, I used experiments, hands-on activities, resources from local community organizations, and materials obtained from a science methods class. Each week, a guest speaker, with a science-related career, talked to the class. Speakers included a supervisor for the local power company, the president of a local tubing manufacturer, and a Lieutenant Colonel from Arnold Air Force Base. Each student was given a folder in order to retain all the materials that they received

throughout the 3 weeks. Also, a career component sheet was put inside the folder for the students to use to write down the different careers that we discussed.

Time Commitments

The study took place during a 3-week period during science class that lasted approximately 45 minutes each day.

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Results

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Prior to the planned instruction, the 17 students that had been given permission to participate completed a pre-survey of their science attitudes and knowledge (see Appendix A and Figure 1). Everyone that had permission was present to participate.

Pre survey questions	Yes	No	Maybe/ Sometimes
Has anyone ever talked to you about different types of careers?	15	2	0
Have you thought about what kind of career you would like to have as an adult?	16	1	0
Do you like to study science?	10	0	7
Are you looking forward to taking science classes in middle and high school?	8	0	9
Do you think that science is important to your life?	14	0	3
Do you think that science is important to society?	12	1	4

Figure 1. Pre-survey results.

On the pre-survey question regarding careers in which they are interested, 10 students listed careers that are science-related, 5 students listed unrelated careers, and 2 students left the question blank. The answers given on the short-answer questions concerning what scientists do and jobs that scientists have were indicative of limited knowledge and understanding. Only 10 students were able to give appropriate answers to these questions, and seven students either did not answer or wrote "I don't know." They were only able to give one example for each question.

Their answers were limited to standard actions of scientists, with the majority of the students listing the words "study" and "research." With regard to jobs that scientist have, most of the students listed the same answers that they had used on the previous question.

After the 3-week instruction period, 15 students were present to complete the post survey. The post survey results showed a positive change and an improvement in knowledge and understanding (see Figure 2).

Post survey questions	Yes	No	Maybe/ Sometimes
Has anyone ever talked to you about different types of careers?	15	0	0
Have you thought about what kind of career you would like to have as an adult?	15	0	0
Do you like to study science?	11	0	4
Are you looking forward to taking science classes in middle and high school?	14	0	1
Do you think that science is important to your life?	14	0	1
Do you think that science is important to society?	15	0	0

Figure 2. Post-survey results.

On the post-survey question regarding careers in which they are interested, 14 students listed science-related careers, and 1 student listed an unrelated career. The answers given on the short-answer questions concerning what scientists do and jobs that scientists have indicate an increased knowledge base and a deeper understanding of the wide variety of jobs that involve science. All 15 students were able to give appropriate answers to these questions. More importantly, each student was able to give more than one example, and 10 students were able to list more than two examples. They were able to list many different occupations that are science-related such as nurse, doctor, farmer, zookeeper, biologist, chiropractor, food technologist, engineer, toy creator, cook, and, my favorite, tour leader for the environment.

Conclusions and Recommendations

Conclusions

After interpreting the data from the pre- and post-surveys, it is apparent that a correlation is drawn between instruction that is rich with applications that are relevant to the student's everyday life, interesting guest speakers, hands-on activities, science-related career education and an increase in students' appreciation for, and interest in, science and science-related careers. Post-survey results showed an increase in the knowledge base of available careers, an increased interest in studying science, and an increase in the knowledge of the importance of science to everyday life.

The researcher also observed an increase in interest and attention of the students when they were involved in an experiment, an activity, or listening to one of the guests speakers. The results of the effects of the guest speakers may not be realized for several years. The results also show the importance of making time to teach science each and every day, and making the science lessons relevant to everyday life so that the students are engaged and attentive.

In addition to the positive results that this action research project had on the students, it also had an equal effect on the researcher. The researcher gained a deeper understanding of science education, motivation to continue to create science lessons that inspire and motivate students to learn and grow, and a desire and an ability to evoke change when needed.

Recommendations

The most fundamental recommendation that I can make, based on this action research project, is for elementary educators and administrators to make time for science education. Once adequate time is made in the day for science class, there are several things that teachers can use

to increase science career awareness and increase students' understanding of science as a part of their everyday life.

One of the most important parts of a science classroom is good resources. In addition to using the textbook and Internet sites, while building the daily lessons for my classroom, I utilized community organizations. These organizations, such as the local electric company, gas company, extension office, Keep Tennessee Beautiful affiliate, and industry will give handouts and free items for students to educators. The use of these resources creates a teachable moment with your students. It allows the teacher to, not only make students aware of the businesses in the community, but how science plays a role in our life each day. Not only are these community resources a great way to get free lesson supplements, they are more than willing to visit your classroom to talk with your students. In order for students to become interested in science-related careers they have to be introduced to the wide variety of choices available to them. I believe that it is very important for students to see many people from the community that hold a variety of jobs.

Another important part of being able to effectively demonstrate science is for educators and administrators to attend seminars, workshops, and conferences that are centered around presenting science, with materials that use hands-on activities and experiments. There are many grant opportunities and special programs, such as Ag in the Classroom, that offer free resources for classroom teachers.

In order to increase students, desire to study science and their interest in science-related careers, I believe we must begin early in elementary school and consistently continue to offer science education that is interesting, motivating, and fulfilling. We must be careful to begin to

introduce students to careers in science early in their K-12 education and continue to do so throughout the middle grades and high school.

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Appendix A

Pre-/Post-Survey
Please _do not_ put your name on this survey. Thank You!

1. Has anyone ever talked to you about different types of careers?
   Yes   No

2. Have you thought about what kind of career you would like to have as an adult?
   Yes   No

3. What are some careers that interest you?

4. Do you like to study science?
   Yes   No   Sometimes

5. Are you looking forward to taking science classes in middle and high school?
   Yes   No   Maybe

6. Do you think that science is important to your life?
   Yes   No   Maybe

7. Do you think that science is important to society?
   Yes   No   Maybe

8. What do you think scientists do?

9. Name any jobs that you can think of that scientists do.