Culminating Experience Action Research Projects, Volume 16, Part 1, Spring 2010

Edited by
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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 2010, are presented below.

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April 25, 2011

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Are Students More Persuasive in Speech When Evaluated by Their Peers or by Their Instructor?

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Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149)

has approved this research project # 10-027.

Introduction to the Problem

This project is driven by research that suggests that both peer evaluation and self-regulated learning alter student attitudes and achievements in scholastic endeavors. Specifically, this study will evaluate peer grading in relation to that of the instructor's grading on a persuasive speech assignment. Though prior research has been conducted addressing student bias and gender issues in relation to peer evaluation, overall persuasiveness and student comprehension has not been gauged in this manner.

The purpose of this study is to decipher whether students in a secondary English classroom are more persuasive in their speech when evaluated by their peers or by their instructor. In a similar study, in 1974, researchers from Indiana University pointed out that, "although we teach audience analysis and adaptation, our judgments of speech effectiveness have most often been made in terms of an audience of one: the instructor" (Hensley & Batty, 1974, p. 1). Taking this into account, the study was conducted using a rubric itemizing eight different criteria: preparedness, content, enthusiasm, stays on topic, speaks clearly, posture and eye contact, persuasiveness, and overall enjoyment. Both the instructor and the student audience will grade each speaker using this rubric, with results to be compared and contrasted following completion.

As students will not be given direct instruction on how to write and execute a persuasive speech, self-regulated learning will also be relevant to this research. The participants in this study will be comprised of two, 11th-grade honors English classes from a public school in Hamilton County, Tennessee. Students will only be given instruction on writing persuasive essays, as outlined by the Tennessee standards for taking the state's standardized writing assessment (Tennessee, 2009b). Students will also study great persuasive speakers, such as

Martin Luther King, Jr., Jonathan Edwards, Patrick Henry, and others, and will participate in a Socratic-style seminar discussion of these authors, and their use of persuasive devices, rhetoric, and vocabulary, their and speaking style. However, because of the students' astute academic standing, the students will not receive outlines, resources, or class time to assist them in their research, preparation, or planning. This is based on the premise set forth by Abar and Loken, who found that, "the highly self-regulated group tend(s) to study more material and for a longer time than less self-regulated individuals" (Abar & Loken, 2010, p. 25). Furthermore, the only limitations or biases that may exist within this study are the accuracy of student grading, given peer pressure and social status issues, which are known to be prevalent inside a secondary school setting, as well as varying student performance levels within the two different classes participating in this study.

Using previous research about peer evaluations, self-regulated learning, student-directed learning, and persuasive speaking, I have developed a study that will compare student success rates with peer evaluation (a more accurate depiction of an audience) versus evaluation performed by an educator only (which is traditionally found in a classroom environment).

Review of Literature

In a case study, by Weaver and Cottrell (1986), peer evaluation is defined as "a new and different form of evaluation… whereby students critique the performances of other students" (p. 1). This same article discusses the benefits of peer evaluation, which include an emphasis on skills, encouragement of student involvement, increased feedback, improving attendance, and teaching responsibility. As mentioned in the introduction, peer evaluation is essential to this study because it more accurately gauges the speaker in terms of how he relates to his audience, rather than just his grader (or teacher). In having students evaluate one another in terms of

public speaking, delivery, and overall persuasiveness, it is likely that a more well-rounded score will result.

As outlined in the Tennessee curriculum standards for English III, 11th-grade English students should be proficient in several State Performance Indicators (SPIs) relating to speech and communication. The following SPIs were used in designing this research project:

- SPI 3003.2.5- Critique ideas and information presented orally by others.
- SPI 3003.2.6- Analyze the ways in which the style, structure, and rhetorical devices of a challenging speech support or confound its meaning or purpose, taking into account the speaker's nonverbal gestures, credibility, and point of view.
- SPI 3003.2.8- Include abstract and theoretical ideas, valid arguments, substantive and relevant details, and sound evidence to support complex points effectively.
- SPI 3003.2.9- Organize an oral presentation on a complex topic by breaking the topic into parts accessible to listeners, emphasizing key concepts or points, and closing with a recommendation or observation on the relevance of the subject to a wider context.
- 3003.2.10- Utilize an organizational structure that enhances the appeal to the audience and is appropriate for the purpose (e.g., sequential, problem-solution, comparison-contrast, cause-effect).
- 3003.2.11- Provide a coherent and effective conclusion that reinforces the presentation in a powerful way, presents the topic in a new light (e.g., as a call to action, placing the topic in context to emphasize its importance), and brings the talk to a clear and logical close.

- 3003.2.13- Employ presentation skills including good eye contact, correct enunciation, appropriate rate and volume, and effective gestures (Tennessee Department of Education, 2009).

As noted in the SPIs (listed above), students not only should be able to create and deliver a quality speech, but should also be able to "critique ideas and information presented orally by others" (Tennessee Department of Education, 2009a, p. 4). In designing this research study to implement both students giving speeches and critiquing speeches through peer evaluations, several standards are encompassed.

In a 1974 study on peer evaluations for a public speaking course, Hensley and Batty found that, "Speech success depends on effectiveness with an audience; no public speaker, to our knowledge, ever swayed masses in an empty room" (p. 1). They went on to tackle the question of how to effectively teach public communication skills to a classroom of students. In doing so, they concluded that peer evaluation was the most obvious solution. They noted:

> There are more students present in the classroom than there are instructors. True audience adaptation by the speaker must take these listeners into account. If we believe that public speaking is communication, it is appropriate to ask if the ratings of instructors accurately reflect the evaluation of the audience to whom the speech may be delivered. (Hensley & Batty, 1974, p. 1)

But, the overall quality of students' persuasive speeches must inherently begin with the quality of the students' persuasive writing abilities. As Tennessee standards require all 11th-grade students to take the writing assessment and write a persuasive essay, this will be a familiar topic to these students (Tennessee Department of Education, 2009b).

Student writing is not only important as part of the defined curriculum for the grade level,

but is also taken into consideration for entrance to most major colleges, as well as to acquire employment after high school or college. This has been taken into account in planning for this study.

In 2004, the National Commission on Writing conducted a survey of 120 American corporations (employing approximately 8 million people), in which they found that writing is a "threshold skill" among employees, and that "two-thirds of salaried employees in large American companies have some writing responsibility" (College Board, 2004, p. 7). The study also projected that the most growth in the U.S. economy over the next decade would be expected to be in service industries, where writing, as well as presentation skills are essential. Moreover, this study revealed that, "where employees need training in writing skills and employers provide such assistance, the average cost of such training is approximately $950 per employee across industries" (College Board, 2004, p. 17). Finally, the study concluded that, "American education will never realize its potential as an engine of opportunity and economic growth until a writing revolution puts language and communication in their proper place in the classroom" (College Board, 2004, p. 22).

Using these statistics, it is obvious why it is imperative for students to learn proper communication skills, which include, but are not limited to, writing and delivering a presentation, as well as evaluating their peers for content and quality within their work. Studies have shown a decrease in students' inner motivation, which many attribute to the instatement of George W. Bush's No Child Left Behind Legislation, after which teachers would begin "teaching to the test." Professor Linda Valli of the University of Maryland, who conducted research on "what constitutes good quality teaching" (Jacobs, 2008, ¶ 2), said of her findings:

Our data show that what we would call high-quality teaching decreased over that period

> of time (after the NCLB legislation began). There were declines in higher-order thinking, in the amount of time spent on complex assignments, and in the actual amount of high cognitive content in the curriculum. We believe these declines are related to the pressure teachers were feeling… Of course this runs counter to the stated idea of NCLB, which is for students to achieve rigorous standards. It is not what we set out to find, but it is what we discovered. (Jacobs, 2008, ¶ 6)

In congruence with this thought, Wolvin speaks more specifically about students' public speech education as a "process," rather than an experience. He says, "It's no surprise, of course, that the field of Speech Communication, like the entire field of Education, has become very process oriented. We no longer view the speech act as a 'performance' in which the speaker pushes the right buttons to manipulate his listeners to the right response" (Wolvin, 1974, p. 1).

So, how can this student apathy, or simply "going through the motions," be resolved? How can students become more engaged with their learning process, in relation to persuasive speaking? One idea, which was used in the creation of this research study, is to directly involve students in their own learning process by using self-regulated learning.

"As students, we've all had the experience of studying and then taking a test, getting it back, looking at the grade and then 'filing it' away." This is how the article written on New York City College of Technology's (2010, ¶ 1) innovative approach to self-regulated learning begins. The article continues to state that professors are trained to teach using certain techniques which facilitate self-regulated learning (SRL), and, in doing so, "students not only retain what they learn, but apply SRL skills to help them succeed academically as they continue on in their studies" (¶ 2) and "results indicate that students in SRL classes were almost twice as likely to pass City University of New York's (CUNY) required COMPASS mathematics exam than those

in non-SRL classes" (¶ 5). Developed in the late 1990s by John Hudesman, a counselor at CUNY for 25 years, it resulted from him conducting a study with incoming students. "'They didn't prepare for tests because they never had to do it in high school. In fact, the least prepared students had the highest opinion of their academic success; they consistently predicted better grades than they received'" (New York City College of Technology, 2010, ¶ 7).

Using this data (along with other supporting information about the success rates of SRL), combined with what was previously discovered regarding the effectiveness of peer evaluation from an audience perspective on public speaking, a study was formulated.

Data Collection and Results

Data Collection

This study took place in two, 11th-grade English classes at a suburban high school in Hamilton County, Tennessee. Lasting approximately 2 weeks (because of unanticipated school closures due to inclement weather), this study was conducted with honors, college-bound students.

The essential premise behind this research study was to test the accuracy of teacher grading versus student grading, and to gauge whether students were more persuasive in their speech when graded by an audience of peers, or by an audience of one (the teacher). Both test groups were graded using the same, eight-topic rubric. However, while one group of student scores were comprised of an average of their classmates' evaluations, the other group's scores were given solely based on teacher evaluation using the same rubric.

After peer-and teacher-grading had ceased, all scores were placed in adjoining spreadsheet databases, both for grading purposes and for data comparison for this research study. Students were graded using the rubric and given grades on a scale of 1 to 4, with the following

criteria being in place for each level: Level 1, Poor (D); Level 2, Fair (C); Level 3, Good (B); Level 4, Excellent (A). Failing grades were only to be administered by the teacher for failure to prepare or deliver the assignment, which did not occur in either class that was participating.

Subjects. As not all students elected to participate in this study, a total of 20 subjects were utilized for comparison purposes (10 from each of the two classes participating). In the first class, six males and four females were part of the study. The second study group consisted of five males and five females. From this point forward, the first study group, which was graded by peer-grading only, will be referred to as "Study Group A," and the second study group, which was graded only by teacher evaluation, will be referred to as "Study Group B."

Methodology. All students were graded (both by peers in Study Group A and by the teacher in Study Group B) using the same, eight-topic rubric (see Appendix A), in which the criteria for grading were: preparedness, content, enthusiasm, stays on topic, speaks clearly, posture and eye contact, persuasiveness, and overall enjoyment. This rubric was given to them in advance, but it was the only instruction given on how to write and deliver a persuasive speech. However, as students had been preparing for the writing assessment, which is a persuasive essay for 11th grade, students in both study groups had already participated in several lessons and been administered both a pre-test (see Appendix B) and post-test (see Appendix C) of persuasive essay writing elements prior to the beginning of this project.

Students were given the assignment (see Appendix D) in class on a Friday, with speeches beginning the following Monday. Students randomly chose numbers to decide the order in which their speeches would be presented. Then, students chose their topics from the list provided by the teacher (see Appendix E) in the order in which their numbers were drawn, with

no more than two students per class allowed to choose the same topic. So, the students who would be delivering their speeches first were given the opportunity to choose topics first.

Results

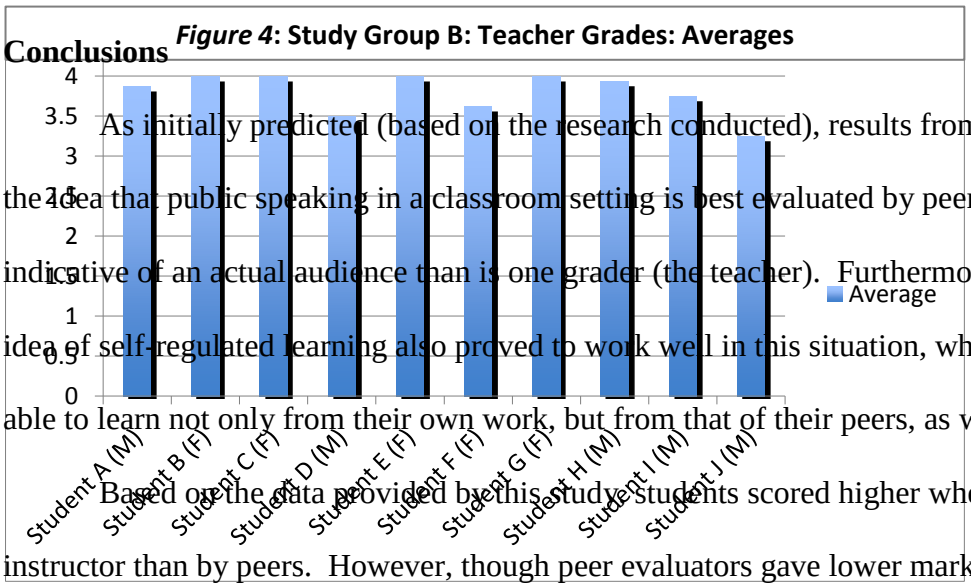
Study Group A scored high marks when evaluated by their peers. By category, student graders scored their peers the highest in the areas of overall content and staying on topic. Students were graded the lowest in posture and eye contact and overall persuasiveness, when evaluated by their peers. Taking the mean data from peer grading, the highest peer evaluation given was a score of four (equivalent to 100%), and the lowest evaluation was a given score of 2.5 (equivalent to 63%).

Study Group B also scored high marks, as evaluated by their instructor. By category, instructor grades indicated the highest performance in the areas of overall content and staying on topic, which were the same areas that reflected the highest scores among student graders for Study Group A. The lowest scores were given in the areas of posture and eye contact and overall persuasiveness, which were also the same areas reflecting low scores in Study Group A. The highest teacher evaluation was a score of four (100%), and the lowest teacher evaluation was a score of three (75%).

When grades were evaluated by means (found by taking the averages of all eight rubric categories combined), all students in Study Group A scored above a three (75%), when evaluated by their peers. The median student grade in Study Group A was a 3.5875, the equivalent of 89.6% on a 100-point grading scale. The mode student score in Study Group A was 3.8375, the equivalent of 96%. The lowest student score from this study group was 3.1462, the equivalent of 78.7%.

When grades were evaluated by means (found by taking the averages of all eight rubric categories combined), all students in Study Group B also scored above a three (75%), when evaluated by the instructor only. The median student grade in Study Group B was 3.90623, the equivalent of 98% on a 100-point grading scale. The mode student score in Study Group B was 4, the equivalent of 100%. The lowest student score from this study group was 3.25, the equivalent of 81.3%.

Conclusions and Recommendations



Conclusions

As initially predicted (based on the research conducted), results from this study support the idea that public speaking in a classroom setting is best evaluated by peers, as this is more indicative of an actual audience than is one grader (the teacher). Furthermore, as discussed, the idea of self-regulated learning also proved to work well in this situation, where students were able to learn not only from their own work, but from that of their peers, as well.

Based on the data provided by this study, students scored higher when graded by the instructor than by peers. However, though peer evaluators gave lower marks, similar viewpoints to the instructor were reflected when analyzing data categorically (itemized by the rubric topics). These similarities in grading patterns substantiate the data results.

Recommendations

Given that students in both Study Group A and Study Group B were in honors level English courses, perhaps this data would not be similarly reflected in a more standard classroom setting. In this situation, modifications could be made by the instructor to include both peer and instructor grading, as well as implementing more guided instruction, as opposed to the self-regulated learning option.

Overall, based on a consensus of research collected from studies conducted by other educators, peer grading does prove a successful measurement of student public speech, both in preparation and delivery.

To assist in cultivating the use of peer evaluations and self-regulated learning in English classrooms across the state, grant money could be allocated to provide for teacher professional development, as well as further research. Further research could include the results of incorporating the availability of technology for the student study groups, such as computers, relevant software, and document readers, which could assist students in peer evaluation, as such resources were unavailable in the school in which this study was executed.

The State of Tennessee was recently awarded $500 million toward education reform as part of the federal funding provided by the Race to the Top legislation enacted by President Obama (United States Department of Education, 2010). As noted in the recent application, based on which this funding was granted, the state of Tennessee aims to "link professional development to teacher effectiveness based on student performance measures" (Tennessee Department of Education, 2010, p. 15). As this study provides proof of student performance measures within this state, funding from this resource would be properly allocated to professional development for teachers on both incorporating peer evaluation and self-regulated learning in their classrooms.

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CATEGORY	**4 Excellent (A)**	**3 Good (B)**	**2 Fair (C)**	**1 Poor (D)**

Preparedness	Student is completely prepared and has obviously rehearsed.	Student seems pretty prepared but might have needed a couple more rehearsals.	The student is somewhat prepared, but it is clear that rehearsal was lacking.	Student does not seem at all prepared to present.
Content	Shows a full understanding of the topic.	Shows a good understanding of the topic.	Shows a good understanding of parts of the topic.	Does not seem to understand the topic very well.
Enthusiasm	Facial expressions and body language generate a strong interest and enthusiasm about the topic in others.	Facial expressions and body language sometimes generate a strong interest and enthusiasm about the topic in others.	Facial expressions and body language are used to try to generate enthusiasm, but seem somewhat faked.	Very little use of facial expressions or body language. Did not generate much interest in topic being presented.
Stays on Topic	Stays on topic all (100%) of the time.	Stays on topic most (99-90%) of the time.	Stays on topic some (89%-75%) of the time.	It was hard to tell what the topic was.
Speaks Clearly	Speaks clearly and distinctly all (100-95%) the time, and mispronounces no words.	Speaks clearly and distinctly all (100-95%) the time, but mispronounces one word.	Speaks clearly and distinctly most (94-85%) of the time. Mispronounces no more than one word.	Often mumbles or can not be understood OR mispronounces more than one word.
Posture and Eye Contact	Stands up straight, looks relaxed and confident. Establishes eye contact with everyone in the room during the presentation.	Stands up straight and establishes eye contact with everyone in the room during the presentation.	Sometimes stands up straight and establishes eye contact.	Slouches and/or does not look at people during the presentation.
Persuasiveness	Uses various techniques and conveys persuasiveness to the audience very effectively.	Uses some techniques and conveys persuasiveness to the audience somewhat effectively.	Uses few techniques and/or has minimal persuasive effectiveness to the audience.	Does not use many techniques and/or is not persuasive to the audience.
Overall enjoyment	Topic is interesting and thought-provoking. Speaker is well-rehearsed and enjoyable to observe.	Topic is somewhat interesting. Most of the speech is enjoyable, with the speaker "losing" the audience once or twice.	Topic is fairly interesting. Parts of the speech are enjoyable, but the execution is not consistent.	Topic is uninteresting and ill-rehearsed. The audience couldn't wait for it to be over!

Appendix B

Persuasive Essay Pre-Test

I. Organizing data to compose a persuasive essay

Introduction

1. How do you get your reader's attention in the introductory paragraph?

2. What should be the final sentence in your introductory paragraph?

Body Paragraphs

1. What should your topic sentence do?

2. What should your sentences following your topic sentence do?

3. What should be at the end of each body paragraph?

Conclusion

1. Your conclusion should give a summary of what?

2. What should be restated in your conclusion?

3. What should your final sentence do?

II. Writing the essay: Circle the errors in the sentences below, then rewrite the sentence in the space below to make it correct.

1. I believe that extracurricular sports are very important amongst teens.

2. Movies such as *Saw*, *The Texas Chainsaw Massacre*, *The Godfather*, etc., do not lead to violence in society.

3. One can learn her lesson if she applies her mind to it.

4. Capital punishment is bad because it is a detriment to society.

5. The government will have really screwed up if they mandate military service for all citizens.

Appendix C

Persuasive Essay Post-Test

I. Organizing data to compose a persuasive essay

Introduction
1. How do you get your reader's attention in the introductory paragraph?

2. What should be the final sentence in your introductory paragraph?

Body Paragraphs
1. What should your topic sentence do?

2. What should your sentences following your topic sentence do?

3. What should be at the end of each body paragraph?

Conclusion
1. Your conclusion should give a summary of what?

2. What should be restated in your conclusion?

3. What should your final sentence do?

II. Writing the essay: Circle the errors in the sentences below, then rewrite the sentence in the space below to make it correct.

1. I believe that extracurricular sports are very important amongst teens.

2. Movies such as *Saw*, *The Texas Chainsaw Massacre*, *The Godfather*, etc., do not lead to violence in society.

3. One can learn her lesson if she applies her mind to it.

4. Capital punishment is bad because it is a detriment to society.

5. The government will have really screwed up if they mandate military service for all citizens.

III. Bonus: Explain the errors in any (or all) of the sentences above. (5 possible bonus points)

1.
2.
3.
4.
5.

Appendix D

Assignment: Persuasive Speech

The main purpose of persuasive texts is to present an argument or an opinion in an attempt to convince the reader to accept the writer's point of view.

Reading and reacting to the opinions of others helps shape beliefs about important issues, events, people, places, and things.

Let’s take our persuasive writing to the next level!

Write and give a persuasive speech on one of the topics provided by the instructor. (Topics are first come, first serve, with no more than two students per class doing their speech on the same topic.)

Give a persuasive speech to your classmates (approximately 2-3 minutes in length) using the criteria given on the grading rubric provided.

Appendix E

Possible Topics: Persuasive Speech

1) Global warming
2) Gun control
3) Fat tax on food
4) Corporal punishment
5) Immigration
6) Minimum wage
7) Racial profiling
8) School uniforms/ dress codes
9) Body piercings
10) Censorship
11) Capital punishment
12) Women's rights
13) Organ donation
14) Stem cell research
15) Home schooling
16) Animal rights
17) National healthcare
18) International relations
19) Alternative energy
20) Childhood obesity
21) Welfare
22) Affirmative action
23) Cigarette/alcohol advertisements
24) Sports salary caps
25) Scholastic requirements for school athletes
26) Performance enhancers in sports
27) Cell phone use while driving
28) Teen curfews
29) Tax breaks for wealthy
30) Recycling
31) Military service/ draft requirements

Effect of the Presence of Music on Student Performance and Morale in Physical Education Classes

Brad Cowell

Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149) has approved this research project # 10-052.

Introduction and Background to the Problem

Students of today are growing increasingly difficult to motivate, especially with regard to physical activity. It seems that advances made in technology have negatively influenced our youth with overexposure to air conditioning, video games, and television. According to a report by the U.S. Department of Health and Human Services, 17% of high school students in Tennessee were obese, 58% did not meet recommended levels of physical activity, 61% did not attend physical education classes, and 38% watched at least 3 hours of television every day (CDC, 2009). Due to the sedentary lifestyles of many Americans, childhood obesity and the development of type 2 diabetes among young people are at an all time high (Bisceglie, 2008). Childhood obesity has increased 35% in the past 10 years. Carrying excess weight for years can lead to high cholesterol, high blood pressure, type 2 diabetes, heart disease, stroke, and premature death (Sherman, Collins, & Donnelly, 2007). It is important for schools to include physical education in their curricula to help children become more active in their present day, and future, lives. Music is often used to serve as an enhancement tool in advertisements, professional gyms, and dramatic moments on stage and screen. It is logical that the presence of music in physical education classes would serve as a motivator and enhance student morale and participation during physical activities.

The purpose of this research is to note whether the presence of music has a positive effect on student morale and enhances student participation while performing the activities required in physical education classes. Any extra incentive or motivating tool is useful to get students to enjoy participating in physical activity. Most students, today, would much rather watch television or play a video game, as opposed to riding a bicycle or playing outside; it is important that physical education classes instill a love of exercise in students, as well as inform students

about the importance of maintaining a healthy lifestyle at a young age (Brewer, Luebbers, & Shane, 2009) in order to combat chronic illnesses brought on by poor diet and a sedimentary lifestyle later in life. This research is designed to provide a subtle, inexpensive, and easily accessible motivator for all physical education teachers of all ages. Music is often used in gyms, aerobics classes, and other arenas of physical activity as a motivator (Strobel, 1990). It is time that we as physical educators began to utilize this powerful resource.

Review of Literature

One of the most difficult things involved with the teaching profession is inspiring children to put forth their best possible self. In today's society of fast food and video games serving as a means of instant gratification, it is very difficult to get children to participate in and enjoy physical activity. Physical educators should seek out, and take advantage of, any motivational tools that may present themselves to assist in developing a love of being physically active within their students. Music has been observed as a motivator for other types of physical activity in previous research. In a study focused on music as a motivator in an athletic setting, a women's swim team was observed and interviewed during music and nonmusic conditions. An assistant coach sat made observations, based on the swimmer's perceived exertion, attitude between exercises, and content of their conversations, while at practice. The swimmers were also given informal interviews during music and nonmusic settings. Both the observations and feedback from swimmers indicated that listening to music during practice improved swimmers' attitudes and mood states, thereby enhancing their athletic performance (Stoeckel, 1999).

A study was conducted at Ohio State University to determine if listening to music while doing exercise would help people with severe lung disease to improve their fitness levels. The group that walked under nonmusic conditions walked an average of 15 miles over the course of

an 8-week exercise intervention study, while the group that walked under music conditions averaged a distance of 19 miles over the same, 8-week program. At several points during the study, participants were timed to see how much distance they could walk in 6 minutes. By the end of the study, the subjects who listened to music while walking for exercise increased the distance they covered per walk by 445 feet (136 meters), while the average distance covered by the nonmusic group decreased by 169 feet (51 meters) per walk. These findings suggest that the subjects in the music group may have been less hindered by shortness of breath, the primary physical symptom of serious lung disease (Wagner, 2002).

Music being used in an exercise environment has also been linked to one of the key contributors to exercise enjoyment. When compared with other variables that contribute to exercise enjoyment, satisfaction with music accounted for the most variance in exercise enjoyment, followed by satisfaction with the instructor, and, finally, salience of exercise role identity (Wininger & Pargman, 2003).

A study was also conducted to determine the effects of music introduced at different time intervals while biking. There was no significant main effect for music conditions for the performance variables: perceived exertion, blood lactate, and affect. However, the results also found that subjects exerted more effort once the music was introduced, and that participants exercised harder when they expected music to be introduced at a later stage, illustrating the behavioral influences that music can engender during self-paced exercise, like biking (Lim, Karageorghis, Atkinson, & Eubank, 2009). A study was performed on subjects that were instructed to walk until exhaustion under conditions of motivational synchronous music, oudeterous synchronous music, and a nomusic control. Results indicated that endurance was

increased in both music conditions (***Karageorghis***, Mouzourides, & Priest, 2009). This, again, illustrates that music can serve as a motivational tool while performing endurance tasks.

In a study determining the effect of music on perceived exertion, six men were tested while running on the treadmill. Significant findings showed that the control group that was given no music to which to listen had higher levels for cardiovascular hemodynamics and plasma lactate, suggesting that they had a greater metabolic demand. The study also showed that music allowed individuals to relax, reducing muscle tension, and, thereby, increasing blood flow and lactate clearance, while decreasing lactate production in working muscle. The combined results of this study suggest that the introduction of music has a psychobiological impact on the exerciser, demonstrated by changes in perceived effort, lactate, and norepinephrine (Szmedra & Bacharach, 1998). These findings show that music served as a means of relaxation or comfort while exercising, and allowed the subjects to exercise at a higher pace for a longer time.

Data Collection and Results

Data Collection

Subjects. This research was completed at a Hamilton County elementary school in a physical education class. Two classes that participated in this research: (a) a fourth-grade class that consisted of 8 girls and 11 boys, all students were Caucasian and there was only one student on a behavioral IEP; and (b) a fifth-grade class that consisted of 11 girls and 13 boys, in which 1 student was African American and 23 students were Caucasian, and there were 2 students on learning IEPs. These classes were chosen because of their observed maturity and behavior during the weeks prior to the implementation of this research.

Procedure. When I chose these classes to be the subjects for my research, I informed them that they were chosen because of their behavior and ability to cooperate, and they would be

doing me a favor to exhibit maturity and cooperation throughout the entirety of this research. I believe that this added incentive of being in a privileged situation where they were able to experience a different learning environment than the other students at the school, and this was a motivator for the students involved in the research to provide their full cooperation, from getting parental consent forms in on time to their cooperative behavior throughout the research.

The first two classes during the project were used to form a baseline, and no music was used. All activity time and guided practice was done without the use of music to gather data about how the students perform in a physical education setting without the added motivation of music, as well as measuring their morale in a nonmusic, baseline setting. After both of these nonmusic classes, the students completed the Performance and Morale Survey (see Appendix A). This survey consists of (a) a table where the students may rank their own performance in the activities that were covered that day in class, with a ranking of bronze, silver, or gold; and (b) four questions where the students may rank their overall morale during class time, on a 1 to 5 scale, with 1 being not at all and 5 being absolutely.

The next classes had music implemented, after the initial instruction and demonstration were completed, and during all times of guided practice and individual activity time. The music was being played from a station that streams in clean, upbeat, and current music from a Web site in Chicago. Each time I had to address the class with further instruction, the music would be stopped, and I would regain the class's attention to provide the guidance that was necessary. Immediately after, I would turn on the music. At the end of class, the students were instructed to, once again, complete the Performance and Morale Survey.

Identification of variables. Variable definitions include the following:

- Dependent variable: Student's morale and participation while in P.E. class.

- Independent variable: The presence of music while the students take part in the required activities for P.E. class.
- Classification variables: The students' answers to the performance part of the Performance and Morale Survey will provide insight into the students' ability to perform the skills that were taught and demonstrated in class on that day. These responses of bronze, silver, or gold will actually be converted to a value of 1, 2, or 3, as nominal data that will provide totals and averages that may be compared between nonmusic and music settings. The students' answers to the morale questions on the Performance and Morale Survey will be on a scale of 1 to 5, with 1 being not at all and 5 being absolutely; these answers will be nominal variables, and will provide insight to the students' morale and enjoyment of the class activities, and will also provide totals and averages that may be compared between nonmusic and music settings.
- Hypothesis: My hypothesis is that the presence of music will have a positive effect on students' morale and participation during physical activities.

Research questions. Research questions include the following:

1. Will the presence of music have a positive effect on students' morale and participation?
2. What particular behaviors should be observed?
3. Should radio or a compilation compact disc be used to implement music?

   The difference between the two is that I would have much more control over which genres and songs were played with a compilation CD and would not have as much control over what was played, if I were to choose a radio station.

4. When should I begin and complete music implementation?

Limitations.

- The sample is limited to the students enrolled in this particular Hamilton County Elementary school, during the spring of 2010, in my cooperating teacher's physical education classes.
- Students will be filling out a questionnaire about their own morale during the class, so the results may be affected by false subject reports.
- Students will be responding to a list of questions about certain behaviors that should, but are not guaranteed to, measure student performance or morale.

Assumptions. The days of class when music is not present, students' morale and participation, while performing physical activities, will be poorer than the days of class when music in present. After the initial joy of the presence of music during physical activity, the students' participation should have a slight drop off from the initial increase. Students' morale, however, will remain at a high level, while music is present, when they are engaged in physical activity. I am also making the assumption that students enjoy music, more specifically upbeat, current music with which they can identify. It is very possible that some students may not enjoy the genre or style of music that I choose. I am also assuming that, if the students can find a connection to the music that is being played and their own individual musical tastes, a higher relationship between the presence of music and the students' morale and participation will exist. (Crust, 2008).

Data collection through survey. After collection of the Performance and Morale Survey for all classes with nonmusic and music settings, the surveys were coded to distinguish between the nonmusic and music settings. The students' responses on the performance part of

the survey were put on a scale of 1, 2, or 3, based on the response of bronze, silver, or gold. These responses were given their nominal quantitative value, and means were compared for the nonmusic and music settings. These totals were also compared with their corresponding morale responses to determine if the students' inherent ability and perceived performance in the activities had any insight to their morale.

The students' responses on the morale part of the survey used the 1 to 5 scale as a means of providing nominal quantitative data, and totals and means were compared between the nonmusic and music settings. These responses were also used to determine if their responses on the individual questions about perceived boredom with the class activities and perceived future use had any correlation to the responses on the performance part of the survey. These responses not only provided nominal quantitative data, but they also served as a means of comparing the students' perceived performance or skill level with the class activities, and their inherent enjoyment of these activities. Did the students' skill level have any influence on their enjoyment of the activities?

Results.

I found that the students' responses during the music setting were actually higher than the responses during the nonmusic settings for both the fourth- and fifth-grade classes, when means were compared between conditions. Students' responses in the fourth-grade class on the performance part of the survey had only a moderate increase, from an average score of 8.5 to an average score of 9.17, based on their responses from the four criteria that were used for physical performance. Students' responses in the fourth-grade class on the morale part of the survey had a very slight increase, from an average of 15.06, to an average of 15.11.

Students' responses in the fifth-grade class on the performance part of the survey had only a slight increase, from an average score of 10.29, to an average of 10.95, based on their responses from the four criteria that were used for physical performance. Students' responses in the fifth-grade class on the morale part of the survey had a larger increase, from an average of 13.76 to an average of 14.76.

My findings did agree with my assumptions about the increase in performance and morale when music was present. These findings, however, did not show a substantial difference. Instead, they showed a slight to moderate increase, based on the criteria on which the students were asked to report on the Performance and Morale Survey.

Conclusion and Recommendations

Conclusions

Based on my findings in this research, no generalizations can be made about the efficacy of music on performance and morale. The small difference between conditions for both groups can only suggest that music affects some students more so than others. The findings about the actual difference between nonmusic and music settings were mixed, and did not show any difference between classes or between settings. The slight increases are not enough to determine an actual cause and effect relationship. These slight increases do agree with previous research on this topic, saying that the performance aspect is enhanced because of a more relaxed and enjoyable experience with physical activity when music is present; however, the slight differences found in this case study do not show a causal relationship consistent across all students. After closer examination, the responses about the students' performance were much more indicative about whether or not the students enjoyed the activities, became bored with the lesson, and would consider the activities in the future for their own recreation. The students'

inherent experience and abilities with the activities were much more of an indicator of their morale during the class. Students who perceived themselves as having moderate to proficient skill in the activities reported that they enjoyed the activities, did not become bored during class, and would enjoy doing similar activities in the future for their own recreation; while the students who did not perceive themselves as being skilled in the activities reported less enjoyment with the activities, reported a higher level of boredom during class, and reported less of an interest in doing these activities in the future. The general consensus about this problem for physical educators is that students seem to enjoy music during physical activity, and, whether or not the differences are significant, they are positive. Physical educators may use music as a motivational tool, but it may work better if the use of music is used as a reward.

Recommendations

Based on the current research on the links between physical activity and the use of music as an extrinsic motivator, I believe further research is definitely warranted and would yield some very useful data. I believe that more concrete evidence could be found on the issue of music as a motivator in physical education settings, if research was done on a group of older student athletes in a weight-room setting. I believe that the more intense the workout, the more that music may be beneficial as an extrinsic motivator. The findings on music aiding with physical activity is during times of more demanding activities and when the participants have some input on the music being used. In this study, considerations had to be made for the age and content-appropriateness of the elementary-aged students. Student athletes in a high school or college setting would be able to have more input on the music being used, as well as being pushed to a level where they may not be willing to complete the exercises, and may need the added motivation of music in a guided workout program. The activities that were done in this research

were done in an elementary physical education setting that must be able to accommodate students of all ability levels. The use of technology in this area is very beneficial, whether or not the findings were significant, the use of technology or music in a physical education setting is always a welcomed resource because of its inherent ability to help motivate students across curricula.

As it stands now, many physical educators use music in their classes, and based on the students' experiences and the teachers' methods of teaching, the students seem to enjoy the use of music in a physical education setting. Although this research did not find a difference between nonmusic and music settings, there were minor improvements made on self-reported responses. I must conclude that there is a benefit from using music in physical education settings, and I am excited to see what future research in a different atmosphere may find.

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Appendix A

Performance and Morale Survey

Code_____

Rank Your Performance on Today's Activities

Skill		Bronze (Needs Improvement)	Silver (Moderate Skill Level)	Gold (Excelled at Skill)
Proper Batting Stance				
Striking a Ball off a Tee				
Tossing a Ball to a Partner				
Striking a Ball in the Air				

Please rank your enjoyment of today's activities from 1 to 5

	Not at all		Neutral		Absolutely
1. Did you have fun in class today?	1	2	3	4	5
2. Did you stay on task the entire time?	1	2	3	4	5
3. Did you get bored with today's activities?	1	2	3	4	5
4. Does this activity seem like something you would like to do in the future?	1	2	3	4	5

Understanding the Gender Differences in Attitudes Toward Technology

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Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149)

has approved this research project # 10-031.

Introduction

The purpose of this study is to look at any difference that gender plays in the attitudes of middle or high school students regarding the use of computers. Current research in a Texas public school system has shown the girls are more likely to have an unfavorable opinion of computers by the time that they reach the end of middle school, whereas boys in the same grades tend to maintain a positive view of computers. The goal of the researcher is to determine whether or not this is true in a high school in Hamilton County, Tennessee. This action research project seeks to answer the following questions:

1. Does gender play a role in how middle school students feel about computers?
2. What factors determine how children feel about the use of computers?
3. Do children who have limited or no access to computers in their home have less favorable opinions of computers?
4. What can teachers do to help improve the opinion that students of either gender have about computers?
5. What factors change the student's opinion about computers?

Technology is a proven asset in the classroom and this project seeks to define which students are not comfortable with computers, why they are not comfortable, when their opinions change, and what instructional methods can be used by teachers to help students maintain a positive attitude toward computer use.

Review of Literature

Gender has played many roles in education. Historical stereotypes place female students in the traditional roles that steer them away from math, science, and technology. During the late 1980s and early 1990s, educators waged war on the gender gap in education. By the late 1990s,

it appeared that both educators and researchers managed to improve the status of gender and education. The existing data regarding gender and attitudes toward technology are conflicting. Researchers disagree as to whether or not gender stills plays a role in attitudes toward technology use by middle and high school students. Additionally, researchers disagree on what factors affect these differences. One common belief among researchers is that the methods that are used to introduce technology to students play in an important role in how they feel about it. Furthermore, the research offers several methods for improving the attitudes of both male and female students toward the use of technology in the classroom.

Attitudes toward Technology

The data regarding attitudes toward technology differ according to the study. A recent study of 59, sixth graders found that there was no significant difference in their level of computer enjoyment (Bain & Rice, 2007) whereas another study showed that 87.3% of students studied liked computers and believed that they could be effective (Li, 2007). However, the first study does have its limitations. The school in which this study was conducted has a high, overall socioeconomic status. Although it may represent other schools with a similar socioeconomic status, it may prove less representative of a more economically diverse school. On the other hand, a study of 10,000 Texas public middle school students showed very different results. The researchers on this project report that female students begin to show a decline in computer enjoyment in the sixth grade. By the eighth grade, the difference is significant enough to be considered an educational advantage for the boys in the study (Christensen, Knezek, & Overall, 2005). The number of students that were involved in this research allows for a more diverse population to study. The data from this study is effective in being applied to more diverse situations. The Texas study provides more universal results due to the population size and the

duration of the study. It is a more comprehensive model on which to base further studies. The study used questionnaires, as well as testing, to assess the populations over various periods of time. Both of these methods come with the limitations of human error and deceit, although they are accounted for within the study.

Factors that Affect the Attitudes of Students

Researchers offer very similar, dominant factors that affect the attitudes of female students regarding computer use. First of all, socioeconomic status is crucial. Female students who come from low socioeconomic status families tend to have the lowest regard for computer use in school (Thom, 2002). Families with a low socioeconomic status tend to have more traditional roles and it is possible that girls in these families are not encouraged to use computers (Volman & Van Eck, 2001). Although socioeconomic status affects access and encouragement of computer use, the differences between girls and boys and how they behave also plays a dominant role in computer enjoyment. Middle school girls are very social; therefore, they view computers as a tool. On the other hand, boys tend to see computers as either a game or a machine (Christensen, et al. 2005). Either way, boys have a tendency to play the game or "conquer the machine." Middle school girls view computers as an aid in meeting their achievements rather than something fun (Christensen, 2005). Girls in middle school tend to disapprove of the "machine focus" that their male counterparts often have at this age because they value personal relationships over technical abilities (McGrath, 2004). Middle school students are often unaware of all traditional, gender-based stereotypes that exist within our society. Research suggests that middle school students have yet to be fully introduced to female stereotypes regarding math, science, and technology (Mayall, 2008). By high school, many of the differences become more evident, with girls often having an even lower opinion of computer

use in and out of the class room (Volman & Van Eck, 2001). High school girls are less likely to enroll in computer science classes and take A.P. computer exams (Dyer, 2004). However, by high school many girls are very confident of their email and Web capabilities, suggesting that they prefer to use computers for more socially-based applications (Christensen, 2005). Boys tend to prefer computer use for games over a social outlet (Volman & Van Eck, 2001). Girls in one study saw themselves as computer competent as boys; some of the boys in the same study felt that they were more capable in computer usage than the girls (Bain, 2007). Overall, societal norms and socioeconomic status place barriers upon the achievement and attitudes of girls, with regard to technology use (Mayall, 2008).

Methods to Improve the Attitudes of Students

Several methods for improving attitudes regarding computer use are available to educators. Intervention methods such as mentoring are effective for students from low socioeconomic status homes (Dyer, 2004). Furthermore, partnering with local companies is suggested as a method of providing mentors to at-risk female students (Thom, 2002). Understanding how girls learn is also effective in creating positive attitudes regarding computer use. Professional development for teachers is a crucial aspect to the success of all of their students (Dyer, 2004). Considering that male and female students often have different learning styles, it is important for teachers to understand that how they introduce technology in the classroom is as important as why they introduce it. Teachers are often not instructed in technology use that is effective for both male and female students (Hew & Bush, 2006). Studies show that both male and female students do well in active and cooperative learning environments, as well as in group settings. By applying these teaching methods to the

introduction and use of technology in the classroom, students of both genders tend to be successful (Thom, 2002).

Understanding the Value of Technology

Technology is incredibly valuable in the education of all students. Teachers can use technology to help their students visualize materials and better understand concrete examples which greatly benefits all students, but, especially, visual learners. Technology use within the classroom enables educators to provide diverse approaches to teaching and learning that cannot always be accomplished by textbook learning (Li, 2007). A recent study has suggested that computer use can have a positive effect on writing abilities. Students in a recent California study showed an increase in their writing skill with the aid of computers because they were better able to review and revise their work by computer than by hand (Wolsey & Grisham, 2007). Furthermore, the amount of time that girls spend on computers, in and out of school, is beneficial to their achievement, although many projects involving technology are not included within school curriculum (Dyer, 2004). Students that have limited access to computers are at the highest risk of having poor opinions of computer use. Research suggests that after school and weekend programs are a beneficial method to bridging the gap for girls with limited computer access (Thom, 2002).

Summary

As technology continues to improve exponentially, the role that it will play in the classroom is expected to increase. Although researchers disagree upon the importance of gender, with regard to the attitudes of middle school students and computer usage, they agree that better access and instruction involving computers is crucial. It is the responsibility of educators to continually search for new and better ways to identify those student populations who are at risk,

and, also, enrich the overall education of their students. If a gender difference is evident with attitudes towards technology use in instruction within the classroom, being able to identify when and why girls lose their positive attitudes can help educators determine what can be done to solve this potential problem, and when. Action research is an important method in being able to better understand how children learn and how to apply instructional methods that engage male and female students in technology use and appreciation.

Data Collection and Results

This study was conducted during a 7-week student teaching assignment at a high school in Chattanooga, Tennessee. There was one group of students that were involved in the study. Prior to instruction, the group was given a survey to assess their opinions and experience with computer usage (see Appendix A). The use of surveys posed a limitation on the research because of the possibility that all students may not answer honestly or accurately. All students were encouraged by the researcher to answer honestly and the importance of honest answers was continually stressed. The sample size for this research was relatively small. There were 18 participants, consisting of 10 females and 8 males. All students were enrolled in a 10th-grade honors world history class. Although the sample size was small, the students were chosen because of their willingness to cooperate and prior content knowledge of the subject. Additionally, the demographics of the sample size were representative of the school where the research was conducted.

The researcher taught one group of students two lessons in order to gather the necessary data; the first lesson was a traditional, teacher-centered lesson, without the assistance of technology; the second lesson was a student-centered lesson that incorporated the use of technology in student learning. Prior to the start of the study, the researcher gave the students a

pre-lesson survey to assess the students' initial opinions on the use of computers. Prior to teaching the traditional, lesson, the researcher gave the students a pre-test to assess their knowledge on the subject. Following the pre-test, the teacher led the students in a traditional teacher centered lesson without the assistance of a computer or other technology. After the non-technology-based lesson was complete, the researcher gave the same test to the group, again, to assess how much they learned from the lesson. Before the start of the technology-based lesson, the researcher pre-tested the students to assess their prior knowledge of ancient Roman architecture. After the second pre-test was complete, the teacher conducted a student-centered lesson that relied heavily on computer usage by students, as well as by the teacher. The technology-based lesson required the use of the school's computer lab in order to ensure that every student had access to the same computer hardware and software. Following the lesson, the teacher gave a post-test to assess what the students have learned from the lesson.

After the tests were complete, all students were given a follow-up survey (see Appendix B). The purpose of the follow up survey is to look for changes in the attitudes of students, regarding computer use in lesson instruction. The researcher analyzed the pre-lesson and post-lesson surveys to look for variation in the group regarding their attitudes about the use or nonuse of computers in instruction. The researcher looked for a correlation between minimal access to computers and negative feelings towards technology, as well as what students find most interesting, if anything, about computer use in lesson instruction. To assess student learning, the teacher will analyze the change in pre-and post-test scores for both lessons to see which lesson resulted in the greatest change in test scores.

Resources

The necessary resources for this study were minimal. The researcher needed access to a computer lab with an available computer with Internet access for each student. This resource is crucial to the instruction of the group. Additional resources included an initial survey, a follow-up survey, and pre- and post-tests for each lesson. Lesson materials are contained in Appendix C.

Sequence of Events

The researcher followed a sequence of events that enabled her to properly assess the student group, as well as correlate both lessons with technology use or nonuse, and its effect on learning. The sequence of events for the study was as follows:

1. Pre-lesson survey
2. Non-technology lesson pre-test
3. Teach non-technology lesson
4. Non-technology post-test
5. Technology lesson pre-test
6. Teach technology-based lesson
7. Technology lesson post-test
8. Post-lesson survey
9. Analyze results.

Results

Results from the pre- and post-surveys were surprising. All students either had a moderate or positive attitude on both the pre-and post-surveys. Of the 10 girls and 8 boys participating in the survey, 2 girls had a moderate opinion of computer use. All of the male participants, except for one, shared a positive to very positive opinion of computer use. Only the opinions of two students changed throughout the course of the study. Both students were female

and both students' opinions improved slightly. The male student who had a moderate opinion of computers maintained his original opinion throughout the course of this study. In this study, 80% of the female participants had a positive attitude throughout the study. The 20 % of female students who started with a moderate opinion left the study with a positive opinion of computer use. All students responded on the survey that the use of technology in a lesson made the lesson more interesting. Seventy percent of students responded that the use of technology would be a method of improving a lesson.

Student Pre- and Post-Survey Results

The first lesson that was taught in the study did not include technology. Thirteen of 18 students showed improvement from their pre-test to their post-test for this lesson. The remaining 5 students scored 100 on both the pre-and post-test, and were, therefore, unable to show improvement. Teaching without the use of technology was effective in this study with regard to test scores, however not all students were able to score what is considered a passing grade in Hamilton County (70 or above). In fact, by Hamilton County standards, three students still would fail the post-test. The teacher-centered strategy used for this lesson resulted in less student interest in the activity because the lesson lacked interactivity.

Technology Based Lesson Pre- and Post-test Results

The technology-based lesson showed significant improvement between the pre-and post-test. Ten students failed the pre-test. The post-test showed drastic improvement because all students passed. In fact, 17 of 18 students scored 100 on the post-test. This lesson had the most variation in improvement between the pre- and post-test scores. Although the same number of students failed both pre-tests, all students were able to earn a passing grade on the technology-based lesson post-test, whereas three students still failed the non-technology-based post-test.

The improvement in test scores reflects the effectiveness of utilizing technology in student learning. Additionally, student interest was higher for this lesson because it was more student-centered and interactive.

Conclusions and Recommendations

The student survey results suggest that a significant gender difference does not exist in the attitudes of 10th-grade students regarding technology. Twenty percent of female students that were surveyed reported having a moderate opinion of computer usage. By the end of the study, these two students had changed their opinion to positive. The small sample size of the study makes it difficult to draw any large-scale conclusions about gender and technology, although it can be determined that the majority of participants in this study had a positive attitude toward the use of technology in social studies instruction, as well as in their daily lives.

By comparing the pre- and post-test data for the non-technology and technology-based lessons, it is apparent that the lesson that utilized computers in the classroom was the most effective in gaining higher post-test scores, as well as student interest and excitement. All students were able to pass the post-test on the technology-based lesson and showed higher levels of improvement from pre-test to post-test, as compared to the non-technology-based lesson. The population size of the study group poses a limitation for relating this data on a large scale, however, I think that this study gives an adequate basis for a larger-scale study of the same topic.

After analyzing the data, and understanding that the differences in test scores represent the difference in how the content of each lesson was conveyed to the students (either with or without technology), this study shows the effectiveness of technology in the social studies classroom for this sample group. Although some opinions about computer use did not change, there were no opinions that fell from positive to negative. The data suggest that a technology-

based lesson is more effective in enhancing a social studies lesson than a classroom that does not utilize technology. Future studies on this subject could focus on multiple teaching strategies that utilize technology and how they affect the attitudes of students. Additionally, further research could study how technology can best be used in the social studies classroom and how teachers can use technology to incorporate student interests with social studies curriculum. Professional development for teachers is also recommended in order to familiarize teachers with current technology and materials that can be utilized in a social studies classroom. This study poses definite limitations on its implications for larger groups, but can serve as a stepping stone for future research within the same school or school system.

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Appendix A

Pre-Lesson Survey

Please answer the following questions based on a scale of 1-5: 1 = Strongly Disagree; 2= Slightly Disagree; 3= Agree; 4= Moderately Agree; 5= Agree

1. I enjoy using computers

1 2 3 4 5

2. I feel uncomfortable using computers

1 2 3 4 5

3. I use a computer regularly outside of school

1 2 3 4 5

4. Computers are best used for schoolwork

1 2 3 4 5

5. Computers are best used for fun

1 2 3 4 5

Please circle the appropriate answer

6. I am: MALE FEMALE

7. I spend this much time on a computer per week:

0 to 2 hours 2+ to 4 hours 4+ to 6 hours 6+ to 8 hours 8+ to 10 hours

Appendix B

Post-Lesson Survey

Please answer all questions to the best of your ability.

1.) What was your favorite part of this lesson?

2.) What was your least favorite part of this lesson?

3.) What do you think could have been done to make this lesson more interesting?

Please answer the following question based on a scale of 1-5: 1= strongly disagree; 2= slightly disagree; 3=agree; 4= moderately agree; 5= strongly agree

1. I enjoy using computers

1 2 3 4 5

2. I feel uncomfortable using computers

1 2 3 4 5

3. I use a computer regularly outside of school

1 2 3 4 5

4. Computers are best used for schoolwork

1 2 3 4 5

5. Computers are best used for fun

1 2 3 4 5

Please circle the appropriate answer

6. I am: MALE FEMALE

7. I spend this much time on a computer per week:

0 to 2 hours 2+ to 4 hours 4+ to 6 hours 6+ to 8 hours 8+ to 10 hours

Appendix C

Roman Map Pre-/Post-Test

1. How many continents were once included in the Roman Empire?

2. Name 2 present day cities that were part of the Roman Empire.

3. Name 6 present day countries that were part of the Roman Empire.

4. What bodies of water were located in the Roman Empire?

5. What role did geography play in the fall of the Roman Empire?

6. How did Roman infrastructure help the Romans to build such a vast empire?

Ancient Roman Architecture Pre-/Post-Test

1. What was the Roman Coliseum? What events were held there?

2. What is Circus Maximus? What was it used for?

3. What is Vatican City? Who governs it?

4. What is the Pantheon? What is its purpose?

5. Where are all 4 of the above mentioned sites located?

Geography of Ancient Rome

I. A look at the extent of Rome at its peak

II. Long Range Objectives

A. Students will analyze maps to understand the vast physical reach of the Roman Empire.

B. Students will determine the role played by geography in the fall of the Roman Empire.

C. Students will investigate the long term geographical effects of the Roman Empire on present day cities and countries.

III. Instructional Objectives

A. Students will complete a blank map to uncover the reach of the Roman Empire on Europe, North Africa, and the Middle East.

B. Students will use their completed maps to analyze cities of the Roman Empire that still exist today.

C. Students will use their textbook and map to understand how geography effected the fall of the Roman Empire.

IV. Instructional Considerations

This lesson is designed for a 10^{th} grade honors world studies class in a culturally and socio-economically diverse public high school. Students who require additional instructional assistance will be accommodated on an individual basis.

V. Instructional Strategies

A. Introduction:

Students will take a pre-lesson test. This test is designed to both activate prior knowledge as well as analyze the level of student learning following the lesson.

B. Map Assignment:

Students will be given a blank map of the Middle East, North Africa, and Europe and asked to fill it in by following the instructions on their handout. They will be allowed to use their textbook as well as any map posted in class to complete the assignment.

C. Map Analysis

Students will be asked to answer the questions on their handout by using their map and their textbook.

D. Students will take the post-lesson test.

VI. Materials and Media:

A. Textbook and class maps

B. Handout and blank map

C. Pre and post-lesson tests

VII. Student Practice

A. Supervised: Students will be supervised by the teacher while completing their maps.

B. Independent: Maps and handouts will be completed independently

VIII. Supplemental Activities

A. Enrichment: Students who require enrichment will be asked to use their completed map and add on several major roads that were built during the Roman Empire. They will write a paragraph on the significance of the roads.

B. Re-Teaching: Students who require re-teaching will be assessed on an individual basis according to their specific need.

IX. Evaluation

Evaluation will be based on each student's map as well as handouts, teacher observations and pre/post-tests.

Map of Ancient Rome

Directions: complete your blank map by following the steps listed below. When you are finished, use your map to answer the questions below.

Map Directions:

You may use your textbook and any map that is posted in the classroom.

1. Color in the area on the map that was controlled by the Roman Empire at is height.

2. Label all bodies of water in the Roman Empire.

3. Draw in all boundary lines for current countries that were once a part of the Roman Empire.

4. Label all major cities within the Roman Empire.

Questions:

1. How far did the Roman Empire stretch from east to west and north to south at its height? Did this play a role in the eventual fall of Rome? Why or Why not?

2. How do you think that the bodies of water within the Roman Empire contributed to its expanse? Explain your answer.

3. How many current nations were once part of the Roman Empire? What does this say about the diversity of Roman citizens?

4. What major cities of the Roman Empire still exist today? What remnants of Roman infrastructure can be attributed to this?

Ancient Roman Architecture

I. A tour of Rome and its Landmarks

II. Long Range Objectives

A. Students will discover the architecture of Ancient Rome with the help of modern day technology.

B. Students will understand how the city of Rome has accommodated its ancient sites into the modern day city by building around them.

C. Students will investigate the locations of specific ancient Roman sites and their significance in ancient architecture.

III. Instructional Objectives

A. Students will use Google maps to uncover a set list of architectural sites and determine their relevance to the city.

B. Students will use technology in an inquiry based setting to understand the relevance of ancient architecture in a major modern city.

C. Students will analyze computer based maps in order to understand the relevance of spatial organization of an ancient city.

IV. Instructional Considerations

This lesson is designed for a 10^{th} grade honors world studies class in a culturally and socio-economically diverse public high school. Students who require additional instructional assistance will be accommodated on an individual basis.

V. Instructional Strategies

A. Introduction:

Students will take a pre-lesson survey. Next they will go to the computer lab where they will be assigned to a computer. The students have been learning about Ancient Rome for two weeks now and are familiar with the material.

B. Computer assignment:

The students will be given a list of major architectural sites in the city of Rome, Italy along with several questions about each. They will be asked to use the "Google map" already on their computer to answer the questions.

C. Analysis

Students will be asked to use their findings to type a 1-2 paragraph summary on the architecture of ancient Rome. The students will be required to connect their computer research to any prior knowledge they may have about Ancient Rome for their summary.

D. Students will take the post-lesson survey.

VI. Materials and Media:

A. Computers with internet access

B. Handout

C. Pre and post-lesson surveys

VII. Student Practice

A. Supervised: Students will be supervised by the teacher while completing their computer research

B. Independent: Computer research and summaries will be completed independently

VIII. Supplemental Activities

A. Enrichment: Students who require enrichment will be asked to use the same map and find 4 more sited of their own in Rome with architectural significance and include a description of each.

B. Re-Teaching: Students who require re-teaching will be assessed on an individual basis according to their specific need.

IX. Evaluation

Evaluation will be based on each student's summaries as well as their completed handout.

Architecture of Ancient Rome

Directions: Use the Google Map to locate the following landmarks and answer the correlating questions by clicking on the “info” link for each place.

1.) Pantheon: Who built it? What was its purpose?

2.) Trevi Fountain: What are its dimensions? When was it completed?

3.) Circus Maximus: What was it used for? How many people could it hold? Describe it.

4.) Colosseum: What does it look like? What street is it located on?(you may need “zoom in” for this one) Who built it?

5.) Vatican City & St. Peter’s Basilica: describe their layout and purpose. Is Vatican City autonomous from Italy? Yes or no. How many people can St. Peter's Basilica hold?

Singing for Fluency: The Effects of Singing on Word Recognition Skills

Benjamin Ezell

Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149)

has approved this research project # 10-007.

Introduction to the Problem

In 2000, the National Reading Panel (NRP) released its report on the five most influential topics related to children's reading achievement. The meta-analysis included fluency as one of the key factors necessary for comprehension during reading. In the years since the panel's findings were released, fluency, as well as the other topics discussed by the panel, has gained much focus and scrutiny from researchers and teachers. One of the main aspects of fluency covered by the panel is the ability to recognize words instantly. In addition to being able to read with speed and proper expression, "fluency depends upon well-developed word recognition skills" (NRP, 2000, Fluency Chapter, p. 3-1).

Many studies have sought to understand particular areas within fluency. These areas include prosody (the use of intonation and inflection during speech) and the speed at which a child reads. Additionally, many studies have focused on strategies to help increase fluency in beginning readers. Primarily, the strategy of repeated readings has been shown to have a positive impact on fluency. Repeated readings simply involve reading a piece of text numerous times in order to gain fluency. Word recognition is the focus of this study. The purpose of this study is to explore the effects that music and singing may have on the word recognition skills of kindergarten students. The integration of music into language arts programs, in an attempt to increase fluency and its finer points, has not been studied in depth. As a future elementary school teacher, and someone with an interest in incorporating music into the curriculum, it would be helpful to see any potential benefits music may have on traditional teaching practices.

Review of Literature

"Fluent readers are able to read orally with speed, accuracy, and proper expression. Fluency is one of several critical factors necessary for reading comprehension" (NRP, 2000, p.

11). These are the words of the National Reading Panel's findings on the importance of fluency as it relates to comprehension and overall reading achievement.

As the panel found, reading fluency has been studied in many ways, and from many different angles. As far back as the early 20th Century, Huey (1905) was busy researching the way eye movements in fluent readers correspond to word recognition skills. As the decades passed, the focus on fluency shifted from the physical attributes of fluent readers to the cognitive processes as they read. Researchers wanted to understand the process wherein fluent readers are able to move quickly through the words on a page, instantly recognize and understand simple words, and save their cognitive processing abilities for more difficult aspects of vocabulary and comprehension. One way fluent readers are able to do this is by utilizing a skill known as "chunking" (Donahue, Voelkl, Campbell, & Mazzeo, 1999). The National Assessment of Educational Progress (1999) has described this as the ability to group entire sections of words into meaningful chunks from which the reader may be able to automatically ascertain the correct pitch, stress, pauses, and intonation. Therefore, fluent readers, rather than focusing on individual words, are able to gather meaning from entire groups of words, at the same time, in order to comprehend the text more quickly. As Vaughn, Chard, Bryant, Coleman, Tyler, Linan-Thompson, and Kouzekanani (2000, p. 326) put it, "Fluent readers have developed the ability to see phrases as chunks of text, and to skillfully use these chunks to read and write more quickly."

In addition to the ability to group words in order to gain meaning more quickly, fluent readers are simply better multitaskers than non-fluent readers. They are much more capable of immediately recognizing and comprehending a word at the same time than non-fluent readers. This function harkens back to the point that fluency enables readers to spend more cognitive ability on comprehension than on pronunciation of the word. "The 'multitask functioning' of the

fluent reader is made possible by the reduced cognitive demands needed for word recognition and other reading processes, thus freeing cognitive resources for other functions, such as drawing inferences" (NRP, 2000, Fluency Chapter, p. 3-8, 3-9).

Prosody would also seem to play a major role in the fluent reader's ability to read in a smooth, concise, and uninterrupted manner. Schreiber (1980) makes the complex argument that the fluent reader has the ability to find the hidden prosodic cues within a written text that is much more apparent in spoken language. He makes the case that children learn much more from the prosodic cues of spoken language than adults do, and, therefore, find it much more difficult to find the meaning in written language with the absence of those cues. This provides an interesting set of challenges for the beginning reader to develop fluency. If, as Schreiber contends, punctuation does an inadequate job of helping beginning readers to lift the correct prosodic features of the text from the page, how do some children become fluent readers so much faster than others? This will be discussed shortly. However, he makes an interesting point about this particular type of difficulty in children's acquisition of reading fluency (1980).

Over the years, not only have studies concentrated on the cognitive processes of becoming a fluent reader, they focus on particular practices which would tend to promote fluency in the beginning reader. Concerning fluency, what does work, according to the NRP, is guided, repeated readings. "The analysis of guided oral reading procedures led to the conclusion that such procedures had a consistent, and positive impact on word recognition, fluency, and comprehension as measured by a variety of test instruments and at a range of grade levels" (NRP, 2000, Fluency Chapter, p. 3-3). Multiple researchers (Samuels, 1979; Stoddard, Valcante, Sindelar, O'Shea, & Algozzine, 1993; Rasinski, 1990; Faulkner & Levy, 1999) have studied the

effects of repeated readings on the reading achievement of children at many age and developmental levels and of many backgrounds.

Samuels (1979) raved about the positive outcomes repeated readings had on the students in his study. While he concentrated on the students' reading speed, as opposed to accuracy, he still noted significant gains in both fluency and comprehension over the course of the study. While many teachers are forced to cover a vast amount of material in a school year, leaving many struggling readers unable to master any part of a text, at any time, Samuels reports that a positive aspect of repeated readings is that they "give the student the opportunity to master the material before moving on" (1979, p. 407). Rasinski (1990) found similar results in that both fluency and comprehension improved with the introduction of repeated reading exercises to third-grade students. His study was a bit different in that he used taped recordings for the students to read along with, but, ultimately, found that neither the repeated readings nor the taped read-alongs proved to be superior to the other. Stoddard et al. (1993), in addition to using repeated readings to measure fluency and comprehension, incorporated either sentence segmentation or intonation cues as part of their study. While reading rates improved due to the repeated reading exercises, no significant gains could be detected through the use of the sentence segmenting or intonation cues.

While the method of repeated readings as a tool to increase both fluency and comprehension has been proven through numerous studies, many other studies have focused on the introduction of music as a means to increase reading achievement. The studies did not necessarily focus on music as a means of improving fluency, but, rather, attempted to link it to success in several different components of literacy. In a study which sought to uncover a link between music instruction and children's phonemic awareness, Gromko (2005) found results to

support a near-transfer theory which links music instruction with a child's ability to segment sounds of spoken words into individual phonemes. This study involved one group of children receiving music instruction while the other group of children received none. Gromko's results supported her hypothesis that there is a positive link between music instruction and phonemic awareness. Most of the studies concerning a link between music and reading achievement focused on direct music instruction to the students, rather than incorporating music into a language arts lesson to understand the effect music would have in that type of circumstance. This is understandable, given the similarities between learning about music, particularly how to read music, and learning how to read words in passages of texts.

A meta-analysis of the literature on this subject was performed by Butzlaff (2000), who found that the correlational studies on the topic of whether or not music instruction improved literacy achievement provided evidence that such a relationship exists. However, these studies do not account for the issue of causality. Does the music improve the reading or are there other factors involved which could account for the improvement? The experimental studies in the meta-analysis showed no reliable effect (Butzlaff, 2000).

Of the studies reviewed for this research, concerning the incorporation of music directly into the language arts program, most of them were not necessarily studies or experiments, but, rather, lists or articles which pointed out the benefits, but performed no experiment of their own.

The two articles reviewed which seemed to touch most closely to this study both contained elements of reading or singing to improve fluency, comprehension, or word recognition. Smith (2000) reviewed several techniques which all involved singing or songwriting, to some degree. He specifically mentions the activity where students sing a song together while one student follows along with a pointer to the lyrics on a piece of chart paper. In

his own classroom, this activity would specifically target either word identification (vocabulary or word recognition) or print conventions (left to right, top to bottom, punctuation). Kouri and Telander (2008) explored how children with a history of speech and language delay might increase their comprehension of a story text according to whether or not they spoke or sang the words to passages of text. The investigators took common stories, and either had the children read the stories normally or sing the words of the story with the help of a tape recorder. They found that there was no significant difference in the comprehension or narrative retelling of the stories after either of the procedures were used. Both the Rasinski, Rupley, and Nichols (2008) and Wilfong (2008) studies investigated the effects of rhyming poetry on the word recognition skills of struggling readers with much success. There may certainly be similarities to the ways in which singing and music could help struggling readers with word recognition in the same way that poetry did in these two studies.

Data Collection and Results

Population

The subjects of the study were Hamilton County kindergarten students. There were nine girls and seven boys who took part in the study.

Procedure

In order to begin the study, 22 sight words (see Appendix A) of varying difficulty were chosen to use as the pre- and the post-test. Eleven words would be practiced with the students using spoken word techniques, such as flash cards or class discussion. The other 11 words would be practiced with the students in the form of songs, which the students would sing during class.

The pre-test was then administered to the students. The students were shown each list of 11 words and asked to read each of the words, to the best of their ability. A checksheet was used

(see Appendix B) to measure the number of words missed, the amount of time given to the student to correctly say the word, and whether or not any help was given to the student to say the word correctly. For approximately the next 2 weeks during class, time was given each day to practice both the sung and spoken word groups with the students. The spoken word group was practiced by showing flashcards to the students. Individual students were chosen and asked to say the word. Any words that proved to be difficult for the students were discussed with the entire class, and pronounced correctly so that everyone could understand the correct spelling and pronunciation of the word.

The sung word group was practiced with the use of songs. The words to three children's songs (see Appendix C) were written on chart paper. Each of the songs included some of the sight words used in the sung word group that the children had been given on the pre-test. At the beginning of each day, during circle time, the researcher would sing one of the songs with the children of the class. Three or four students were selected per day, and each one would have the opportunity to come to the front of the class and follow along with the words of the song with a pointer. It was important that one of the students follow along with the words of the song as it was being sung so that all the students would know where they were in the song and could see each word as it was being sung.

As the class sang the song together, the researcher would also play his guitar to provide a little musical accompaniment. A guitar is certainly not necessary, but it helped to make the experience more authentic and enjoyable for the students. Over the course of the 2 weeks, each song was played and sung a few times, and the students became acquainted with the words comprising each song. The researcher would often ask the students to name any of the sight words they could find in each song before beginning to sing them in the morning.

At the conclusion of the 2-week period, I gave the students the post-test, which was exactly the same as the pre-test. I used the same checksheet to calculate the number of words missed, the time given to each student per word, and whether or not any help was given to the student to say the word correctly.

Results

After the 2-week period, 14 out of 16 students had increased the number of words they said correctly in the spoken word group. One student had said fewer words correctly in the same group, and one student had remained the same, with regard to the number of words said correctly.

In the sung word group, 6 out of 16 students had increased the number of words they said correctly, 6 had remained the same, with regard to the number of words said correctly, and 4 had decreased in the number of words they said correctly.

In both the sung and spoken word groups, all but two of the students had decreased the amount of time it took them to say each word correctly, and there were only two students given help on the post-tests of both word groups. While the number of words spoken correctly from the pre-test to the post-test varied somewhat from the spoken to the sung group, there were two students who improved dramatically in the number of words they said correctly. One student improved by four words in the spoken group, while another improved by five words in the sung group, going from eight words missed to only three words missed. Especially in the spoken word group, most of the improvement shown by the students was only one or two words. The ranges of progression and regression in the sung word group, between the pre- and post-test, was much greater than in the spoken group. Six students improved, six students stayed at the same level, and four students missed more words on the post-test.

Conclusions and Recommendations

Based on the results from this small study, music and singing, when incorporated into a traditional language arts program, do not have a significant impact on the word recognition skills of kindergarten students. While results varied between groups and students, it's clear to see that students improved most dramatically in the spoken group of sight words, compared to the sung group of sight words. This is not to say that there was no increase in word recognition for the sung group, as the largest increase of any of the students occurred in this group of words, but, overall, there was more improvement when the sight words were taught using more traditional methods of instruction than with music and singing.

The study, as a whole, could have been improved in many ways. A checksheet was used to gauge the abilities of the students to say the words correctly. This checksheet could be replaced by some sort of other test which may provide a more reliable way to gauge the students' skills. The words that made up both groups were words that many of the students may have been practicing independently, which could account for any improvement. There are many outside circumstances which could have come into play which could account for any increase or decrease in the amount of words the students said correctly.

Obviously, a more accurate study of this kind would involve a larger sample of students over a much longer period of time. An entire semester of practice, with both of these methods of instruction, would provide a more reliable set of data. The data from this study only encapsulates a time period of just shy of 2 weeks.

Based on the current lack of research concerning music infused into traditional teaching methods, there can still be many advantages and positive outcomes for students exposed to this kind of alternative instruction. The students in this study enjoyed the musical element of

instruction very much. Due to time constraints, there were always lots of disappointed children who didn't have the opportunity to stand at the front and point at the words as they were sung.

This is the type of study that doesn't necessarily need lots of funding or grants in order to be implemented. The guitar was used as a part of the study purely for the interest of the students. The average teacher only needs to write the words on the chart paper and lead a sing-along in order to mix in a bit of music into the lesson. The benefits of this type of activity are real, and should be explored more thoroughly.

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Appendix A

Sight Words

(Pre-test and Post-test)

With Song and Music	**Spoken Word Group**
him	at
jump	get
little	has
on	in
what	me
up	ride
go	big
may	was
it	be
out	like
the	her

Appendix B

Sight Word Checklist

Student I.D.	# of Words Missed	Time Spent on Word (0-5 seconds)	Time Spent on Word (6-10 seconds)	Help Given
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

Appendix C

Sample Songs

Itsy Bitsy Spider

The itsy bitsy spider climbed up the water spout.
Down came the rain and washed the spider out.
Out came the sun and dried up all the rain.
And the itsy bitsy spider climbed up the spout again.

Weather Song

What's the weather? What's the weather?
What's the weather everyone?
Is it windy? Is it cloudy?
Is there rain? Or is there sun?

Weather helper, weather helper,
Tell us what you see outside.
Go and look out of the window.
Tell us what you see outside.

Froggy and Fishy

Little froggy jumps up, up on the lilypad.
Watch him jump. Watch him jump.
Little fishy swims fast over the riverbed.
Watch him swim. Watch him swim.

Froggy may jump and fishy may swim.
They are still the best of friends.

Exceptional Education in the Fifth-grade Mathematics Classroom: A Study of Comparisons

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Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149)

has approved this research project # 10-051.

Introduction to the Problem

My first year of teaching was in an urban environment where I was asked to teach math to a gender-based class of fifth-grade girls. The curriculum was presented to me without any instruction on how to use it appropriately for differentiated instruction. Most of that year was spent following the text in a step-by-step manner, as it was organized by the district's pacing guide. The majority of the students were below-proficient, and were not learning appropriately, and the students who were deemed as "gifted" were uninterested and unchallenged. During the next 2 years, I taught in a differentiated classroom where the gifted learners were grouped together. The strategies that I have learned and used to appropriately teach gifted learners have increased student success and achievement. However, I feel that there is more to be done.

It has been my experience that the gifted learners that I taught needed an environment where strategies were used that allowed them to exercise their talents in math in a way that benefited them most. Since not all students are alike, especially not gifted learners, I have found it necessary to utilize various instructional strategies such as compacting, scaffolding, and acceleration. Even though the above strategies are utilized regularly, there remains a void in the fulfillment of the students in these classes. They are performing adequately, and their grades are above average, yet, they could be achieving much more at a much higher level.

Supporting research, as found in *Mentoring mathematical minds* (Gavin, Casa, Adelson, Carroll, Sheffield, & Spinelli, 2007), and *Enrichment curriculum: Essential for mathematically gifted students* (McAllister & Plourde, 2008), suggests that additional, instructionally-sound strategies should be implemented that will allow for the students to display their different talents at different times (McAllister & Plourde, 2008). These strategies include tiering, telescoping, guided investigations, and using relevant curriculum such as Singapore Math. Used

independently, they are all good and viable, but, when used together, they are tremendously more beneficial to the cognitive development of the student.

Consequently, the problem of how to implement these different strategies in the instruction of gifted learners, and which strategies or combination, thereof, is most advantageous to the gifted learner, is raised. In order for a beneficial approach to teaching mathematics to a gifted learner to be developed, I will implement the use of three additional instructional strategies within my fifth-grade mathematics classroom. The results from this study will be based on the outcomes of using (a) tiered instruction; (b) guided investigations; and (c) a relevant supplemental curriculum, such as Singapore Math. My desire is to find a combination that is most beneficial to the academic achievement of my gifted learners. The achievement of the students will be measured by way of comparison of scores to those of other gifted learners that are being taught the same base curriculum, Everyday Mathematics, and through the comparison of Unit Assessments and Think Link scores to those of fifth graders I taught during the 2008-2009 school year, primarily using acceleration, compacting, and scaffolding (Wright Group/McGraw-Hill, 2004). Additional measures will include surveys of gifted learners, and teachers of gifted learners and exceptional education teachers, regarding learning and teaching preferences, and pre- and post-interviews of said parties.

Review of Literature

The National Council of Teachers of Mathematics (NCTM) states that students who are gifted learners "have the right to experience education as a relevant, challenging, and engaging enterprise" (House, 1987, p. 18) This entitlement provides a challenge to teachers across the nation as they struggle to teach, not only the student who needs a faster pace and a more academically-engaging curriculum, but also the proficient student who is middle of the road, and

the below proficient math student whose progress is measured by No Child Left Behind (NCLB). Each student must be taught in a manner that will produce beneficial results, while, at the same time, not frustrating them into a pattern of apathy and aggravation. Thus, the teacher of mathematics is faced with the issue of how to appropriately differentiate the instruction of each student, especially that of the gifted learner who is not typically monitored under the auspices of NCLB (McAllister & Plourde, 2008).

Research has proven that, when gifted learners are taught a curriculum that is a marriage between acceleration and enrichment, they make much larger achievement gains than those who are only provided with one or the other. Furthermore, these students tend to learn mathematical concepts at a more accelerated rate than when taught the traditional curriculum that is normally used for the proficient and below proficient learner (Gavin et al., 2007). It is, therefore, imperative that educators look at the curriculum and strategies that are being used to teach mathematics, and determine a methodology that will produce optimal achievement results for the gifted learner. Failure to do so yields catastrophic results that will continue to increase the failure of American students in the global market (Gavin et al., 2007).

Out of a sense of survival, the vast majority of math classrooms today are using a one-size-fits-all approach of teaching math (Kettler & Curliss, 2003). The pressure of the district and school administration to produce annual yearly results (AYR), the demands of parents to provide acceptable grades, and a challenging classroom environment, in addition to the constant struggle to maintain a sense of order and an optimum learning environment, create a tremendous obstacle that the teacher must navigate. Unfortunately, this navigation causes the teacher to feel forced to focus on the "squeakiest wheel," so to speak, spending more time on remedial and repetitious instructional strategies. This action results in curriculum that is provided by the district which is

taught in such a way as to bring up the below proficient learner's achievement levels, and to bump up the "bubble" students who are on the verge of being advanced (McAllister & Plourde, 2008). It does not, however, tend to address the advanced or gifted learner who needs more challenging material that will invoke higher-level thinking and reasoning (Hazelton & Brearley, 2008). This approach has significant flaws. For example, when the gifted learner is ignored, their brain will not maintain its current level of development (McAllister & Plourde, 2008). Also, left unchallenged, the gifted leaner becomes bored with the curriculum and forfeits any academic gains through lackluster work.

In order to address the learning styles of the gifted learner, the teacher must teach using mathematical strategies at an increased pace, with less repetition (Kettler & Curliss, 2003). Gifted learners acquire information faster than the proficient students. Research supports that they retain this mathematical information with a high level of accuracy when taught at a rate that is double, or, even, triple that of their peers.

Most teachers tend to use only the approach of acceleration. However, this strategy is useful for only a small portion of gifted learners and does not fulfill the needs of the majority of these students (Gavin et al., 2007). A second strategy is that of enrichment, where the student is provided with the opportunity to work on projects in small-group settings, allowing them to problem solve and reason using mathematical principles. Unfortunately, enrichment is often neglected as it is difficult to attain sufficient objectives in 1 hour per week classes that are plagued by insufficient funds and student absences (McAllister & Plourde, 2008).

Research suggests the implementation of additional strategies such as telescoping, tiering, guided investigations, and the use of relevant and challenging curriculum, be used alongside of the traditional strategies of acceleration and enrichment. Telescoping is defined as curriculum

compacting where 2 or 3 years of instructional curriculum is compacted into 1 academic year. Tiering is where objectives and activities are provided at appropriate levels of challenge for the students, while they are all being taught the same skills and concepts (Kettler & Curliss, 2003). A guided investigation is a strategy where real-life problems are investigated. Here, gifted students are allowed to work independently, thus exhibiting a sense of control over their learning, use logical thinking, and utilize concepts learned in an abstract manner (Schroth & Helfer, 2008). Other relevant curriculum is suggested that will challenge the gifted learner to use concrete activities to anchor the practical application of mathematical concepts, thus providing the scaffolding needed for the abstract problems that are involved in real-life situations (Hazelton & Brearley, 2008).

The concerns that naturally arise from this investigation include the question of how does a math teacher in a mixed-ability classroom utilizes these multi-faceted strategies while, at the same time, not neglect the demanding needs of the below-proficient student and the proficient student. The time constraints and the demands of NCLB seem to force the teacher to sacrifice the needs of the gifted learner for the benefit of the others. Also, the lack of curriculum that addresses how to teach math to the gifted learner is a frustrating problem (Gavin et al., 2007). Furthermore, teachers must spend time preparing themselves to teach mathematical concepts in a way that is relevant and challenging to gifted learners. Professional development is needed in these areas so that teachers can take advantage of the additional training that is guided by the state's academic standards and by the goals of the NCTM.

Data Collection and Results

Data Collection

The research was conducted at a magnet school which is located in Chattanooga, Tennessee. The school partners with seven area museums to enhance each student's educational experience, has a high rate of parental involvement, and is locally and nationally known for its high level of instruction and test scores. The students that attend the school are both zoned and lottery-based. Those who apply to attend the magnet school, but do not live within the school's zone, are entered into a lottery for a placement drawing that works to insure equity among race, gender, and socioeconomic background.

The fifth-grade classroom where the research was conducted is uniquely designed to look like the Market Street Bridge in Chattanooga, Tennessee. The students sit at tables that are arranged in a U shape, and are surrounded by teaching tools such as educational posters, math manipulatives, and supplies. The room also includes a class library, two computers, and a wall of windows. Additional technology in the classroom consists of a Promethean ActivBoard that allows for interactive lessons.

The research was conducted within a fifth-grade math class that I teach. The class is composed of 24, fifthgraders. Of those students, one is coded as English for Speakers of Other Languages (ESOL), and 22 are coded as gifted, by the state of Tennessee. Seven of the students are male, and the remaining 17 students are female.

First, the different parties involved in the gifted learners' classroom were surveyed to ascertain individual learning and teaching preferences. The classroom teachers, the students, and the exceptional education teachers are all involved in the instruction and learning process, and were surveyed to determine learning and teaching preferences. The surveys were conducted in the classroom for the students, while the teachers could submit their surveys through a drop box.

The student survey (see Appendix A) consisted of questions that determined the learning style preferences of the student. Questions asked, "Do they prefer guided investigations as to a specific text?" etc., with explanations provided for clarity. Also, the survey determined how they tend to react when they feel that they have mastered a concept and are ready to move on.

The educator survey (see Appendix B) addressed teaching styles mostly used with gifted learners, and whether or not there is a feeling of necessity for additional, differentiated instructional strategies in the gifted learners' classroom. Questions reflected the teacher's instructional preferences.

Furthermore, the research in this study involved the comparison of Everyday Math unit assessments and Think Link assessments data for students from my 2008-2009 and 2009-2010 fifth-grade math students who are coded as exceptional education, or gifted learners (Wright Group/McGraw-Hill, 2004, Discovery Education Assessment, 2009). (Everyday Math is the adopted math curriculum of Hamilton County Department of Education, and the Think Link Assessment is a formative assessment tool built by Vanderbilt University assessment research, and facilitated through Discovery Education Assessment, which assists in measuring student achievement.)

Math standards, as dictated by the State of Tennessee, as well as Hamilton County standards, were utilized in the teaching of the Everyday Math curriculum. The benchmarks used were for fifth-grade students.

The gifted learners were taught the strategies of accelerating the teaching of content as the students exhibit understanding, scaffolding techniques such as activating prior knowledge and inquiry-based instruction, and enrichment through pull-out classes. Additional strategies of tiering instruction and assignments according to the understanding and abilities of the students,

guided investigations that involve independent research, data collection and analysis, research presentation, and relevant supplemental curriculum via mathematical model drawing, as used in Singapore Math strategies, were also used to enhance the instruction.

Results

The Discovery Education Assessment (2009), Think Link, was administered on three occasions during the year. Discovery Education compiles the results of the standardized assessments and reports the students' scores as a growth rate. The mean growth rate of the students in 2008–2009 had an increase of 22 points, a 1.4% rate of increase, between the first assessment in the fall and the third assessment in the spring. The growth rate of the students in 2009–2010, who were taught using the additional strategies, resulted in an increase in the mean growth rate of 61.67 points, a 3.9% rate of increase, between the first assessment in the fall and the third assessment in the spring (see Figure 1).

Unit Assessments also showed an improvement between the scores of the 2009-2010 students who were taught using the additional strategies and those of the 2008-2009 students who were not. When assessed using the same pool of questions on the Everyday Math Assessment software, the mean grade on the Algebra Unit Assessment increased 0.80 points from 2008–2009 to 2009-2010. The mean grade on the Geometry Unit Assessment increased 3.27 points between the same time periods (see Figure 2).

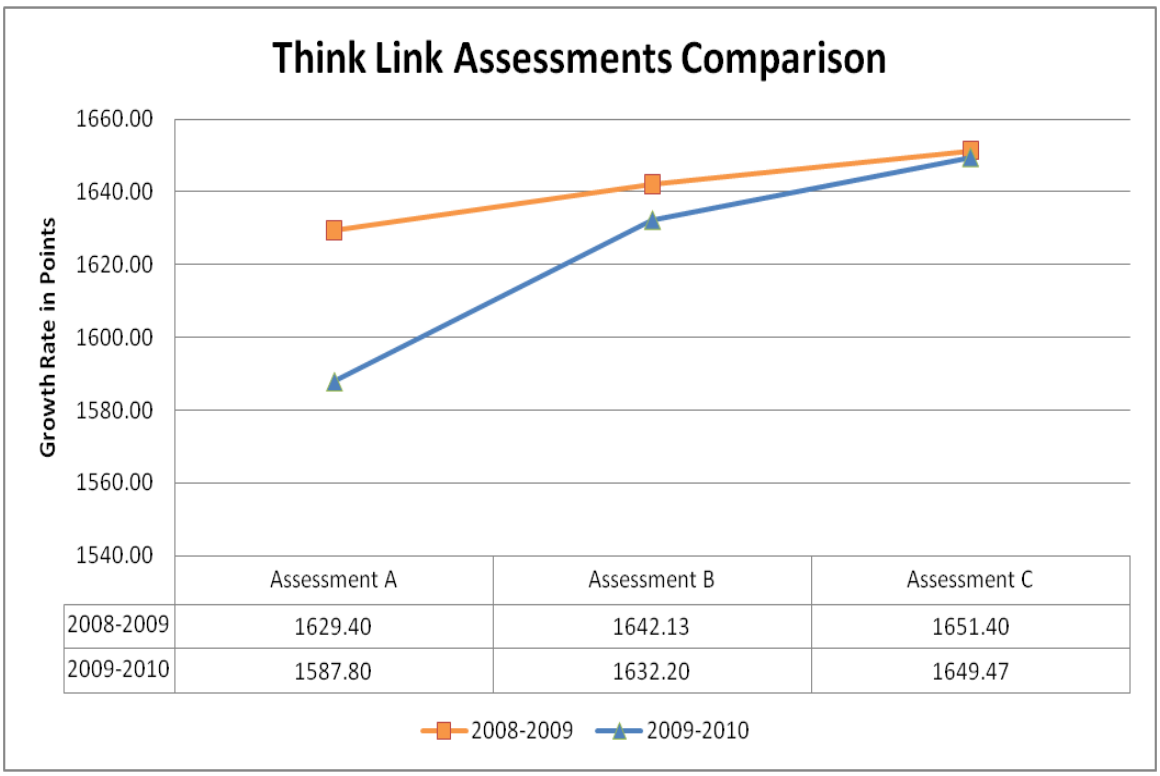

Figure 1. Think Link assessment growth rate comparison.

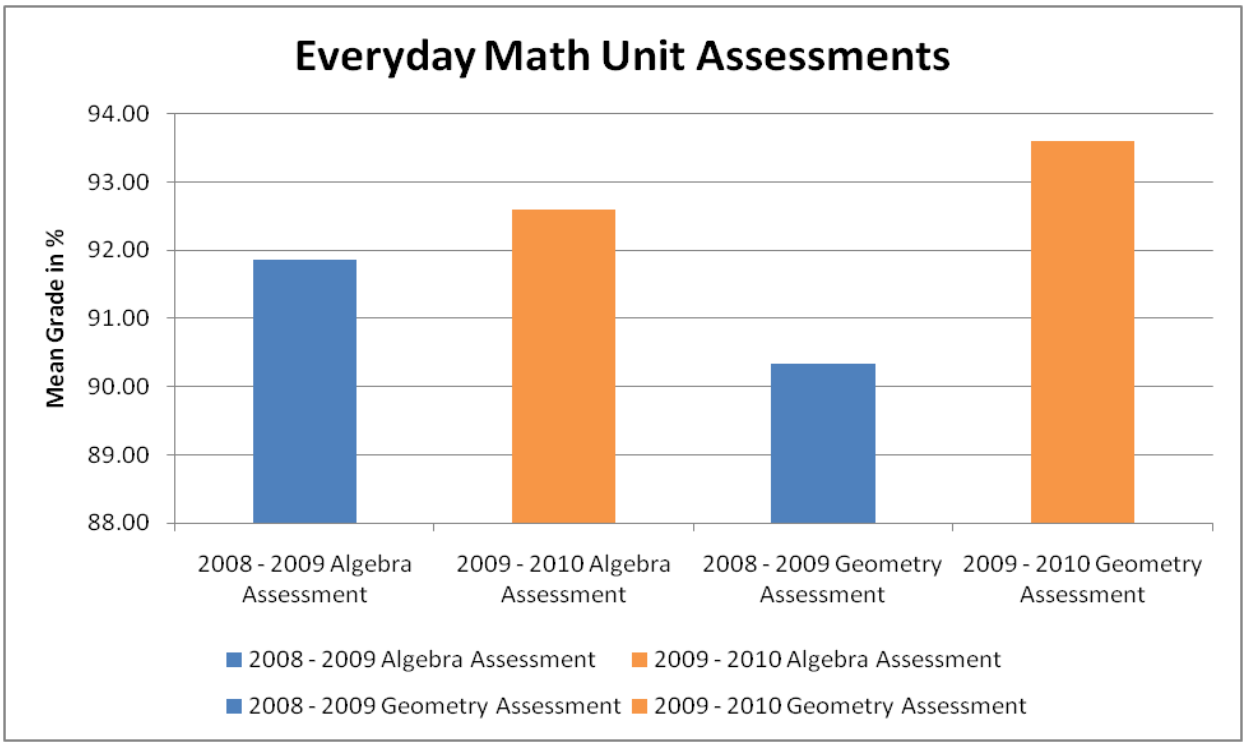

Figure 2. Everyday Math unit assessments comparison.

Conclusions and Recommendations

Conclusions

The statistical evidence shows that, while the maximum growth rate did not substantially increase, the use of the additional teaching strategies, while instructing the gifted math student, did have a marked affect on their overall rate of growth. An increase in the growth rate of almost 4% this year, as compared to 1.4% over the same amount of time the year prior, is a considerable improvement, and indicates that students respond quite favorably when exploring math through these strategies.

The comparison of the algebra and geometry unit assessments also reflects an increase of student understanding, as evidenced through the assessment mean scores. An overall increase of 3 percentage points on the geometry unit assessment demonstrates that the methods of instruction, again, made a considerable impact on the students' understanding and recall. The use of Singapore Math strategies to help students interpret and solve geometric word problems, as well as the use of tiering instructional approaches that allowed the student the ability to advance, based on their level of understanding in the content area, proved to be quite beneficial while the students explored the aspects of geometry.

These favorable results are in agreement with the general consensus of both the regular education and exceptional education teachers who used the additional approaches, throughout the year, to instruct the math students. Thus, the data confirms the overall belief that, when challenged, the exceptional education student will perform exceptionally, and will advance in their overall growth. The general education and exceptional education teachers involved in the math instruction of gifted students support the data findings, and concur with the interpretation, thereof.

Recommendations

The data presented as a result of this study will help to improve the classroom instruction of gifted learners, as well as to further their development as mathematical thinkers, in my classroom and school, through the development of a more rigorous gifted math curriculum that uses the strategies studied. The regular education and exceptional education teachers in my school agree that the use of these strategies produces acceptable results in the academic progress of our gifted students. Furthermore, the data will be strategic in the development of my school's supplemental math curriculum, as the school further implements additional curriculum strategies, such as those found in Singapore Math, throughout all grade levels.

Additional professional development in the areas of guided investigations, enhanced curriculum, etc., should be pursued by our math teachers as we vertically plan a math curriculum that will allow for our gifted students to move to the instructional levels that are needed for their cognitive development. The professional development will also accompany the investigation of grant monies to underwrite the costs of such training. Grants are written by our faculty, yearly, and the possibility of receiving an award to fund this training is highly possible.

Finally, the use of technology within the enhanced teaching of gifted students is extremely important. The ability of students to do guided-curriculum investigations on the Internet is directly affected by the availability of quality computers in the classroom. Additionally, the use of technology, such as the Promethean ActivBoard, where students can interact with the lesson and practice their strategies, is imperative to the successful use of the strategies researched.

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Appendix A

Student Survey

Please rate the following methods of mathematics instruction by circling the number that best reflects your level of preference. This survey is anonymous and confidential.

1 = ***least*** preferred and **5** = **most** preferred.

1. I like exploring new topics on my own to see if I can figure it out or find the answer myself before learning about it in class.

   1 2 3 4 5

2. I like it when I find an answer to a problem and then explore solutions to other more difficult problems that are related to the original problem.

   1 2 3 4 5

3. I like using other strategies to solve math problems, such as 8 Steps Model Drawing, that allow me to illustrate my thinking before I figure out a solution.

   1 2 3 4 5

4. I like to use my previously gained knowledge of mathematics to explore more challenging math strategies like algebra and geometry.

   1 2 3 4 5

5. I like it when I solve a math problem and then I am challenged with another related problem that is more difficult to solve allowing me to use my prior knowledge and reasoning to find the solution.

   1 2 3 4 5

6. I enjoy learning math at a fast pace where I can move on to new concepts and strategies once I understand and master a concept.

   1 2 3 4 5

7. I am comfortable learning math that is above fifth-grade such as sixth-grade algebra or geometry.

   1 2 3 4 5

8. I am comfortable investigating and learning math concepts in ways that I enjoy while others are investigating and learning the same concepts in the different ways that they enjoy.

   1 2 3 4 5

9. I enjoy working independently to investigate a real-life problem where I must work toward a solution using mathematical concepts, i.e. data collection and graph interpretation.

   1 2 3 4 5

10. I like working on math problems that are involved in real-life situations where I can use math strategies that I already know to explore possible solutions.

    1 2 3 4 5

Appendix B

Educator Survey

Please rate the following methods of mathematics instruction to Exceptional Education students by circling the number that best reflects your level of preference. This survey is anonymous and confidential.

1 = ***least*** preferred and **5** = **most** preferred.

1. I prefer to allow students to explore new topics on their own to see if they can figure it out or find the answer themselves before learning about it in class.

   1 2 3 4 5

2. I like to extend a math exercise by presenting more difficult problems that are related to an original problem allowing the students to practice additional strategies and explore other possible solutions.

   1 2 3 4 5

3. I find that using additional relevant curriculum to teach strategies to solve math problems, such as the Singapore Math strategy of 8 Steps Model Drawing, challenges the gifted learner and allows the learner to easily transition from the concrete to the practical and then to the abstract application.

   1 2 3 4 5

4. When I teach math to gifted students, I prefer to scaffold on their prior knowledge in order to explore more challenging math strategies like higher level algebra and geometry.

   1 2 3 4 5

5. I find it beneficial to extend the teaching and exploration of a strategy by challenging the student who has just solved a math problem with an additional related problem that is more difficult allowing the student to use their prior knowledge and reasoning to find the solution.

   1 2 3 4 5

6. When students exhibit an understanding or mastery of a strategy, I accelerate the pace of teaching and move on to new concepts and strategies using less repetition.

   1 2 3 4 5

7. I prefer to compact mathematical concepts that are one and two grade levels above my students allowing them to stretch and further explore their understanding of the material.

   1 2 3 4 5

8. I prefer to teach mathematical concepts to students on their individual level of understanding. This method allows the students to be challenged at their appropriate level of understanding while their classmates may be instructed at a completely different level.

   1 2 3 4 5

9. I provide students opportunities for independent work where they can investigate a real-life problem that they can solve using mathematical concepts, i.e. data collection and graph interpretation.

   1 2 3 4 5

10. I prefer to provide students math problems that are involved in real-life situations where they build upon and use math strategies they already know to explore possible solutions.

    1 2 3 4 5

Getting Students to Read by Increasing Reading Enjoyment

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The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149)

has approved this research project # 10-022.

Introduction to the Problem

Research suggests that young adolescents are becoming less inclined to read as they progress in school. Students' interest in reading significantly drops between middle and high school. This occurrence is a problem that is happening all over the United States. It is imperative that students become proficient in reading comprehension; it has been linked to higher academic success in all other academic subjects. We, as educators, need to get students interested in, and excited about, reading to ensure a successful academic career path (Meyer, 2008). There are a number of outside factors that inhibit students from wanting to read, including advancement of technology, family life, and laziness. This question has been studied by many who have offered some interesting solutions to this problem, but none of these solutions have been proven effective.

The purpose of this study is to determine why students' interest in reading tends to drop significantly between middle and high school grades. In studying the effects of teaching methods and curriculum, research would be done on how altering the literature to which students are exposed might help pique their interests and encourage them to become more involved in reading and improve grades.

The participants in this study will be a 9th-grade English class from the public school system in Hamilton County, Tennessee. This study will be qualitative-research-based and will last approximately 2 months.

While conducting this study, like all studies, there will be many variables associated with this research that will lead to limitations. This study will be mostly qualitative and will rely on the opinions of the students being researched. The biggest limitation in this study will be the

truthfulness of the students on the survey they will complete. They also might not choose to participate, which could make the sample size too small.

In addition, students who already have a negative reaction to reading may let that negative perception hamper their feelings toward reading. They may prove to be too stubborn to be encouraged to give reading another try. These are the limitations that the researcher foresees, however, it is entirely possible that more limitations might arise, as time progresses in this study.

This study assumes that the students will be advanced and literate enough to be able to read on a ninth-grade level. The researcher also believes that the students will be self-disciplined enough to read and complete all of their assignments, as assigned by the teacher. The researcher also assumes that the students will be truthful and receptive to participating in this study.

Review of Literature

Recent studies have shown that 69% of eighth-grade students fall below proficiency levels in to their ability to comprehend what they are reading. Equally alarming is the fact that 26% of students read below basic level, which means they cannot understand and learn from the text they are reading. This shows that today's young adolescent students are not being adequately prepared for college and the workforce. Reading is the basic foundation to all academic subjects. Without the foundation of reading, students are being set up to fail in other areas.

The ability to read and comprehend is a key indicator of how well a student will perform in math and science, according to many who have researched the topic. With the advances made in technology, students today are required to have far more advanced literary skills than required in previous generations. In addition to the crisis facing today's youth, recent studies have shown that older students have not kept pace with increasing demands for literacy in the workplace,

either. All of these outline the need to help improve student literacy, and find ways to make students want to read, in order to promote future success in academics.

Serious attention needs to be paid to the fact that students are reading less, and, in order for students to acquire the skills they need, they must work hard to refine and build upon the initial reading foundation they already possess (Kamil, 2008).

President George W. Bush tried to fix the literacy problem by passing the No Child Left Behind Act (Glod, 2008). The act was passed to promote literacy in schools and improve comprehension in elementary schools. However, students enrolled in the $6 billion federal reading program are not reading any better than those who don't participate, according to a U.S. government report.

Critics point out that one of the programs associated with Bush's act, Reading First, places too much emphasis on explicit phonics instruction and doesn't do enough to foster understanding. The report alleges that there was a conflict of interest among management of the program. Federal investigators have found that some people who helped oversee the program had financial ties to publishers of Reading First materials (Glod, 2008).

This begs the question: Why are kids not reading? Most children enjoy reading, before they enter the fifth grade. After that, reading tends to drop off significantly and continues to drop as they get older. There are many factors relating to why reading drops off at this age, with technology being the main factor. Computers, iPods, cell phones, and video game consoles are all major technological advancements that have hindered children's passion for reading. Most kids would rather sit in front of a television, instead of actively engaging in reading (Meyer, 2008). Children spend an average of over 45 hours watching television each week. Couple that with surfing the Internet, playing video games, and listening to music, and it is easy to see why

reading has taken a backseat to entertainment, and reading scores are down among young adolescents (Hodgson, 2008).

Another deciding factor in the decline of reading is how teachers are presenting reading as a subject. Teachers are expected to teach the material a certain way to ensure appropriate test scores for the school. This type of teaching can be considered boring in the eyes of the teacher and the student. Both the teacher and the student can become discouraged because neither of them is getting what they want from the assignment. This takes away from enjoying reading outside of the classroom, and students often feel like they cannot relate to the books being assigned in the classroom (Hodgson, 2008).

School districts around the United States comply with state and the International Reading Association's (IRA) requirement to hire highly qualified teachers who can help close the achievement gap and raise reading achievement for all students. According to the government, teachers need to have a strong knowledge of strategies. They need to know how choose and use high-quality instructional materials suited for the specific needs of the students. The IRA's perspective is that teachers and schools are responsible for creating a rich literate environment in their classrooms so that students are immersed in a context that promotes development and growth (Farstrup, 2005).

Fifty percent of the American population does not read for recreational purposes, despite the fact that reading has been linked closely to social life, political activism, fine arts, and volunteerism. The average person, between the ages of 18 and 24, spends less than 7 minutes reading, per day versus spending 2 to 2.5 hours in front of the television (Meyer, 2008).

The home environment has a massive influence on a child's academic performance. Parents who value education tend convey that to their children, as well. It is important for

children to see their parents reading for pleasure, themselves, to properly influence them on the values of reading (Purdon, 2009).

According to Hodgson (2008), intensive reading and learning in a person's early years is imperative for a child's development. Children enjoy reading and phonics at an early age, and enjoy the challenge of comprehension reading. This is why parents taking the time to sit down with their children is so important. However, most parents cite the lack of time as the main excuse for not sitting down with their children and reading to them. In addition, print media such as magazines and newspapers are on the decline, making it harder for parents to sit down and read to children. There are other ways of promoting reading, if a parent cannot find the time to sit down and read to children. One effective way is encouraging the child to keep a journal, and write in it on a daily basis. By keeping a journal, this will allow the child to use words and develop writing skills. Another method can be playing word games while in the car, or while at the dinner table (Dad's playbook: Coaching kids to read, 2006).

In addition to parents having an impact on children's love for reading, teachers also play a prominent role. Studies have shown that there are five key components that are critical to the development of reading proficiency: decoding/phonemic awareness and phonics, morphology, vocabulary, fluency, and text comprehension. Evidence gathered suggests that the degree to which individuals have mastered the skills and abilities associated with these components affects their reading ability in later years. To be effective, teachers must be aware of instructional approaches and strategies that can be used within their existing curricula to help improve the literacy levels of the struggling readers that they encounter (National Institute for Literacy, 2007).

Instead of relying on boring assignments, teachers have the ability to make reading fun for students. While this can be a challenging role, it can also be a rewarding one. By simply adding a variety of class texts, including ones to which the students can relate, a student's love for reading can be enhanced. Students are hungry to read material to which they can relate; the problem is finding texts that will catch their attention. Using culturally relevant texts is one good source with which to begin. Language and identity are inseparable, and providing opportunity for students to explore their identities is something with which they will want to relate (Feger, 2006).

Another method of getting students' attention while reading is through the use of visualizations. Readers have long been described as entering a secondary world when they begin to visualize a text. Proficient readers enter this world and gather textual evidence to comprehend what they are reading. Teachers are often taught to read a text and answer the questions provided at the end of the selection, thus making teachers unprepared to approach specific comprehension strategy instruction. Being able to visualize helps readers connect with the text as they consider the sensory images evoked by the characters, settings, and events (Onofrey & Theurer, 2007).

Setting up a theatre, or a haven for children to express themselves, has also been linked to reading motivation. At a reader's theatre, students can rehearse a poem, joke, story, script, speech, or appropriate text until they feel comfortable reading the material. This type of theatre especially benefits challenged readers who are intimidated by reading. Here, they can hone their skills and become more proficient in reading, which, in turn, will lead to more enjoyment of reading. With regular reading performances, all students have the opportunity to practice and successfully perform reading. This boosts self-confidence in the student, as well. Deploying this

type of reader's theatre has boosted reading comprehension among students and has had a positive impact on some of the most stubborn readers who disliked reading before going to the theatre. Once a student has mastered reading, as a result of participation in reading theatres, the only regret they have is that they did not start going sooner (Worthy, 2002).

A study was conducted by students from Morehead State University, in Kentucky, to research the following question: Do teaching practices in secondary schools with high reading achievement scores differ from those in schools with low reading achievement scores? The study noted that 44.30% of middle school and 71.25% of high school students score below the proficient level in Kentucky. The study consisted of four data collection methods: (a) teacher survey, (b) teacher observation, (c) teacher interview, and (d) comprehensive school improvement plan. After conducting the survey, the researchers concluded that there were differences found in teaching practices in schools with high reading achievement scores and teaching practices in schools with low reading achievement scores. The study also noted that the schools with higher scores tended to do more to promote literacy than did the schools with the lower scores. The study proved that, by promoting literacy in schools, higher scores will be achieved (Klecker & Pollack, 2004).

Reading literacy and motivation have been a growing problem in the United States. With all the advancements in technology, and the culture of this generation, it is not surprising that reading has taken a plunge. There are many factors that influence a student, with regard to reading. Parents and teachers need to do a better job of teaching and encouraging students to read more often. In addition, school systems need to change curriculum to better interest the students. Reading motivation is a problem that starts at home, but it carries over into the classroom. If parents, teachers, and schools systems will work together, this country can start

reversing the trend of plunging reading levels and put students on the track toward academic success.

Data Collection and Results

Data Collection

This study took place in a 9th-grade English class at a suburban high school in Chattanooga, Tennessee. The study lasted approximately 3 weeks. The class studied was an honors class, with students who are expecting to attend college upon graduation. The main purpose of this research was to see if the students would perform better on an assignment if they were able to choose the literature to read. I assigned two different reading assignments to students. I selected the first assignment. For the second assignment, the students were allowed to choose what they read.

I began the study by asking the students to complete a survey concerning reading habits and attitudes (see Appendix A). These items included questions and statements to be rated: Do you enjoy reading outside of school? Do you enjoy the literature assigned in the classroom? I would enjoy reading literature more if I chose the literature. How many hours a week do you spend reading? How many hours do you surf the Internet? How many hours do you watch television?

The results of this survey were what I expected. The responses from the surveys suggested that most of the students do not read outside of the classroom in their spare time, but they spend an enormous amount of time per week surfing the Internet and watching television. The survey also suggested that the students would be more receptive and excited to read if they were able to choose the literature they read for a class assignment.

Next, I assigned the students to read the story, *The Cask of Amontillado*, by Edgar Allan Poe. The students were to read the story and write an essay, or summary analysis, about the story that measured if they understood basic parts about the plot and literary terms that coincided with the Tennessee curriculum standards.

For their second assignment, the students were free to choose from any of the stories from the literature textbook, *Elements of Literature: Third Course*, and read. After completion of the second reading, the students were given the same assignment as the first; write an essay, or summary analysis, about the story. If they wanted, they had the option of writing an alternative ending to the story, but none of them elected to do that. Instead, they chose to write a summary analysis about the story.

The entire class roster composed of 23 students, but only 11 students elected to participate in the study. Most students showed a willingness to participate when I presented it to the class, but many did not turn in the consent forms in a timely manner, and thus they were disqualified from participating. There were six males and five females that participated in this study.

The researcher designed a rubric to grade each set of essays (see Appendix B). The rubric outlined the five major parts that were graded: introduction, creativity, spelling and punctuation, organization, and focus on assigned topic.

Results

The average score on the first assignment was 61.09%. The highest score was a 98%, while the lowest was a 0%. Three of the students chose not to do the assignment, which brought down the overall average. This suggests that these three students were not excited about the assignment and elected not to do it, but this is only speculation. It is also worth noting that all

three of these students who did not do the assignment were male. Females scored much higher than males on this assignment, as the median score for the females was 84.4%, while the males scored 41.3%. The scores of the males were heavily influenced by the three zeros.

The average score on the second assignment was a 75.27%. The highest score, again, was a 98%, while the lowest score, again, was a 0%. Only one participant chose not to turn in any work during this assignment. Again, the females scored higher than the males, with an average of 86%, while the males scored an average of 66.3%.

Conclusions and Recommendations

At the beginning of this research, I believed that, if students were given the opportunity to choose what they read, then they would score better on assignments. This research proved my theory correct, however, I believe that my research cannot adequately assess this since the sample size was only 11 students. My goal was to have 100% participation from the entire class of 23 students, but many of them did not get all the necessary consent forms to me on time. I believe that my research would have been more effective with a larger sample size. I am pleased with the results of my research because, as a future literature teacher, it gives me an idea on how to get my students more engaged and excited about what I will be teaching them. I found it interesting that 3 of the 11 students chose not to participate in the mandatory reading assignment. This reaffirmed that students are less likely to do the work and put forth the effort, if they are not excited about it. I also found it interesting that all three of the students who did not do the work during the first assignment were male. This tells me that females are more excited about reading than are their male counterparts. It is also something that I am interested in researching. I am curious about why females are more inclined to read than are males.

It is also worth noting how different the students' attitudes were during the first and second assignments. During the first, I noticed that their attitudes were very unenthusiastic and lethargic. The students seemed to be going through the motions while working on the assignment that I had given them. Their attitudes changed, drastically, during the second assignment, as they seemed to be having fun with the selections that they read, and their papers reflected that. While a 75.27% on an assignment is still rather low, it does represent a 14.18% increase over the score on the teacher-selected literature.

As I conducted my research, I noted how much improvement the males showed from the first to second assignment than on the first assignment. The males scored 25% higher on the second assignment. This tells me that males would probably read more and achieve higher scores if they had a say in what they read while in school. The females, on the other hand, showed minimal improvement, with 1.6% higher on the second assignment.

Based on this research, I would recommend to teachers that they employ a strategy similar to the one I did in this research, and give the students a choice in what they are reading. While my research is for a small sample, it proved that students are more likely to score higher on assignments, and actually do the assigned work, if they are given a choice in what they read. Hopefully, this will pique their interests and lead them to dedicate more time in their daily lives to reading, rather than television, video games, and the Internet. While technology is valuable and useful, it is also part of the problem why students are not reading as much as they should.

This research paper has gotten me excited, as an educator, about the possibilities of getting my students excited about reading. I am very interested in doing more extensive research on the topic, with a much larger and more diverse population, to see if my small study reflects the overall attitudes of students' opinions on reading. I am interested in looking and applying for

grants to continue my research, in hopes of finding ways to get students excited about reading, and finding out why reading has taken a backseat with today's youth.

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Appendix A

Student Survey

Please fill out this survey and return to instructor. Please answer all questions on this survey truthfully. This survey is anonymous, and individual responses are confidential.

1. On a scale from 1 to 5, with 1 being lowest, I enjoy reading outside of school.

    1 2 3 4 5

2. On a scale from 1 to 5, with 1 being the lowest, I enjoy the literature assigned to me in the classroom.

    1 2 3 4 5

3. On a scale from 1 to 5, with 1 being the lowest, I would enjoy reading more if I were to choose the literature.

    1 2 3 4 5

4. How many hours per week do you spend reading?

    0 to 1 1+ to 2 2+ to 3 3+ to 4 4+

5. How many hours per week do you surf the internet?

    0 to 3 3+ to 6 6+ to 9 9+ to 12 12+

6. How many hours per week do you watch television?

    1 to 5 5+ to 10 10+ to 15 15+ to 20 20+

Appendix B

Rubric

Student Code: _____

CATEGORY	4	3	2	1
Introduction	First paragraph has a "grabber" or catchy beginning.	First paragraph has a weak "grabber."	A catchy beginning was attempted but was confusing rather than catchy.	No attempt was made to catch the reader's attention in the first paragraph.
Creativity	The story contains many creative details and/or descriptions that contribute to the reader's enjoyment. The author has really used his imagination.	The story contains a few creative details and/or descriptions that contribute to the reader's enjoyment. The author has used his imagination.	The story contains a few creative details and/or descriptions, but they distract from the story. The author has tried to use his imagination.	There is little evidence of creativity in the story. The author does not seem to have used much imagination.
Organization	The story is very well organized. One idea or scene follows another in a logical sequence with clear transitions.	The story is pretty well organized. One idea or scene may seem out of place. Clear transitions are used.	The story is a little hard to follow. The transitions are sometimes not clear.	Ideas and scenes seem to be randomly arranged.
Focus on Assigned Topic	The entire story is related to the assigned topic and allows the reader to understand much more about the topic.	Most of the story is related to the assigned topic. The story wanders off at one point, but the reader can still learn something about the topic.	Some of the story is related to the assigned topic, but a reader does not learn much about the topic.	No attempt has been made to relate the story to the assigned topic.
Spelling and Punctuation	There are no spelling or punctuation errors in the final draft. Character and place names that the author invented are spelled consistently throughout.	There is one spelling or punctuation error in the final draft.	There are 2-3 spelling and punctuation errors in the final draft.	The final draft has more than 3 spelling and punctuation errors.

Can Healthy Snacking Improve Classroom Performance?

Erica Jolly

Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149)

has approved this research project # 10-021.

Introduction to the Problem

Diet and nutrition play an important role in the lives of almost every living organism on the planet. Children's diets and ever-increasing cases of childhood obesity are major concerns for the United States. Childhood obesity has become a very controversial topic in many school districts. There are over 9 million children who are overweight or obese across the nation (Crute, 2005). This number is a three-fold increase in childhood obesity since the late 1970s (Crute, 2005). Ethnicities have been proven to play a role in children who are obese. For example, significantly higher proportions of Hispanic and African American children are overweight (Crute, 2008).

With all this information, important questions to ask are: What level of responsibility should be placed on schools concerning children's health? What level of responsibility should lie on the shoulders of parents? Society, in general, continues to debate whether schools and teachers are food police, and questions whether teachers should have an input into what children bring into their classroom to eat at snack time. There are many Americans that feel, as a society, we are overreacting with concerns over overweight children. Some Americans feel that children have somewhat of a right to eat what we call junk food, and that children will shed pounds as they mature and grow.

Teachers in today's classrooms constantly face challenges in terms of behavior and test scores that may be out of their control. This has brought me to the topic of this proposal. Does the diet of a student affect his or her behavior and performance in the classroom? Can a student improve their achievement in the classroom by simply making healthier food choices?

Description of Problem

Student performances in my third-grade classroom have been declining between meals, around the time of mid-morning. My speculation is that the students experience a "hunger crash," and need a healthy mid-morning snack to revitalize their brains and provide needed energy to carry them through the morning until lunch.

This research project will test whether students' scores on chosen intelligence tasks will be affected with the addition of a healthy mid-morning snack.

Research Questions/Hypotheses

1. Will providing a "healthy snack" in between breakfast and lunch increase the students' behavior and overall performance in the classroom?
2. Will the students fully eat the snack given to them for the full 10 days of the experiment?
3. Which of the five types of tasks will receive the highest overall scores for the "snack time" results and for the" non-snack time" results?
4. Will the students also show an improvement in behavior alongside achievement as a result of the "snack time?"

I hypothesize that the mid-morning snack will increase students' scores on the ten administered tasks. I feel a healthy snack will provide students an extra boost to carry them though the day. I also feel that I will be helping the students develop healthier eating habits.

Review of Literature

Comparing diet to academic performance is something researchers have been doing for quite. However, many studies focus on malnutrition instead of the relation of healthy nutrition to academic performance (Heller, 2008). After reading several online, science-based, journal articles, I found credible support that the nutrition of any human being plays a vital role in his or

her ability to perform tasks (Overweight Teen, 2008). The human brain, itself, needs a large number of nutrients to produce important neurotransmitters that help humans process information. Brain science researchers have proven that a very small nutritional deficit can have a major impact on the human brain (Overweight Teen, 2008). For example, in the 1980s, New York City schools made several changes to the school lunch menu and saw the average performance of schools in the city rise from the 41st to the 51st percentile, a gain that could not be proven by any other explanation other than the nutritional value increase for the students (Overweight Teen, 2008).

I researched information on foods that are considered brain foods, and have been scientifically proven to improve certain areas of performance such as memory, eyesight, and learning. This was great support for my project to help me determine which snacks to offer to the students. I also found very interesting information that linked food additives to children's poor behavior. This is a very controversial topic for many parents and researchers. The most common food dye discussed to cause behavior problems was tartrazine (yellow dye no. 5) which has been linked to asthma, eczema, urticaris, and margarines (Beseler, 1999).

I read numerous research studies on the topic of diet and performance that had already been investigated. These articles were able to aid me in developing my own research design and methodology. I chose to design my research project around one article, in particular, that I found to be very helpful (Worobey, Johnson, & Hamm, 2001). With this article, I was able to design the logistics of my project and better implement my proposal.

A previous study, led by Dr. Paul Veugelers of the University of Alberta, surveyed and studied 5,000, fifth-grade students. Using food-frequency questionnaires and studying students' food intake, he was able to conclude that students with an increased diet quality were less likely

to fail literacy assessments (Florence, Asbridge, & Veugelers, 2008). In particular, students with an increased fruit and vegetable intake and lower caloric intake of fat were significantly less likely to fail the assessments. Veugelers made the following comment after his research was complete: "In light of the current childhood overweight epidemic and underlying poor dietary habits, prevention is a public health priority. Our findings suggest enhanced learning as an additional benefit of a healthy diet in childhood" (Heller, 2008, ¶ 15).

Data Collection and Results

Methodology

The design of the research project was, as follows. The research data was collected for a total of 10 days. One week (5 school days) was devoted to the proposed trial "snack time" agenda, and the following week was devoted to one week (5 school days) with no mid-morning snack times. During the week of snack time, each day of the 5 snack days, a snack was given at approximately 10:00 a.m. The students were given one of the following snacks for each day from the list below (two options per day were provided):

- Day 1: Strawberries or bananas.
- Day 2: Apple slices or bananas.
- Day 3: pineapple or bananas.
- Day 4: grapes or pineapple.
- Day 5: yogurt or pineapple.

Once the students completed their snack, they began completing the assessment worksheet for the day (drawn from Teachnology, Inc., http://www.teach-nology.com/). The assessments chosen were paper and pencil tasks that could be administered in a group format with verbal instructions. The tasks were chosen based on their age-appropriate suitability for

third-grade students. These tasks could be conceivably solved by any child at this age, provided he or she paid attention and took his or her time. The tasks were as follows:

- Day 1: How many triangles are there?
- Day 2: List three things that…
- Day 3: Secret code 1
- Day 4: Maze 1
- Day 5: Remember the picture? Park
- Day 6: How many squares are there?
- Day 7: List four things that…
- Day 8: Secret code 2
- Day 9: Maze 2
- Day 10: Remember the picture? Sports.

Testing

All tasks had a pre-set time limitation in order to ensure individual variation in success. After completion of the time-restricted task, all worksheets were collected and the tests were not allowed to be revisited by the students at any time. I then compiled all the data into an Excel spreadsheet for later viewing.

During week 2 (5 school days) of the research, no mid-morning snack was given and the students were required to take a similar assessment following the same time restrictions. Again, all worksheets were collected and were not allowed to be revisited by the students, at any time. This data was also recorded in an Excel spreadsheet for review. Please note that the paired tasks for each week were very similar but not exactly the same. This was a control put in place to

prevent memorization of answers or familiarity of the worksheets by the students, as this might skew results.

Results

Below are the results for each week (see Figures 1 and 2).

Week 1:	Good	Better	Best
How many triangles are there?	10	3	7
Secret code 1		1	15
List three things that…	5	4	10
Maze 1	1		18
Remember the picture? Park	2	6	7

Figure 1. Week 1 results: Good = Missed 3 or more questions; Better = Missed 2-3 questions; Best = Missed 0 questions.

Week 2:	Good	Better	Best
How many squares are there?	5	8	3
Secret code 2	1	1	17
List four things that…	3	2	11
Maze 2	2		16
Remember the picture? Sports	3	4	10

Figure 2. Week 2 results: Good = Missed 3 or more questions; Better = Missed 2-3 questions; Best = Missed 0 questions.

Conclusions and Recommendations

Conclusions

Based on the above results, I am able to make the following conclusions. Giving the children a healthy snack during snack time did not improve their scores on the given intelligence tests. This could be due to many different variables including the individual assessment instruments, themselves. I monitored the students as they were given the snack and completed the assessment; I noticed that I had an increase in behavior problems due to the excitement of bringing food into the classroom. The students were extremely disruptive after I gave the snack, and, on most days, I had to calm the group before giving the assessment worksheet. I was completely shocked by their change in behavior.

Students were also given a food habit survey (see Appendix A). This survey asked questions about the students' eating habits outside of the school setting and gave greater insight to how children feel about fruits and vegetables. I found these surveys to be extremely beneficial and provided me with greater background knowledge on what fruits and vegetables the children liked and disliked.

Test Results. I do not consider the results for week 1 and week 2 to vary drastically. The numbers lie around the same median score for each task, and within the same score category. I hypothesized that the week that I gave the students a healthy snack that I would see a change in assessment scores. My hypothesis proved to be inconclusive.

Recommendations

The benefits of eating a healthy diet have been proven, well before this research project. Although this research did not prove that a healthy snack increased my students' achievement scores, I still highly recommend that parents, teachers, or anyone involved with children continue to promote a healthy diet and lifestyle. I recommend that students monitor their diet and sugar intake.

The benefits of eating healthy are more than likely not a priority in our children's lives. As adults, it is our responsibility to teach children how to lead a healthy lifestyle. This practice will increase their confidence and help them live healthier and happier lives. Teach moderation to all children. The purpose of teaching healthy nutrition to children is not to produce children that never eat an ounce of sugar. However, teach children how to treat themselves, occasionally, and in moderation.

Snacking is a helpful way for children to boost their energy until the next meal. However, I believe snacking is only beneficial to children if the snacks have high nutritional values, and are low in caffeine and processed sugars. I recommend that school districts around the country follow suit of other school districts that monitor what snacks children are allowed to bring into the classroom. I think this is beneficial for the children and the teachers. I am aware of several schools that are already monitoring snack time and have had good results doing so. As a teacher, I recommend sending home a list, at the beginning of the year, of acceptable, healthy snacks for the classroom. I think this measure may seem drastic to some, but is necessary due to the alarming, rising statistics of childhood obesity. Obesity in America has risen so much that these measures are necessary. Helpful tips to promote healthy snacking amongst children were found on the Mayo Clinic Web site (Mayo Clinic Foundation for Medical Education and Research. 2007, ¶ 3), and include the following suggestions:

1. Give your kids a say in the healthy snack to be eaten.
2. Don't be fooled by label gimmicks. Really look at the label. Many fruit juices claim to be healthy but are full of sugar. This is also true for several other supposedly healthy foods.
3. Choose whole grain wheat over white bread.

4. Demand that your children eat a healthy breakfast for a good start to the day. This is crucial.
5. Practice what you preach to your children. Be a role model by eating healthy yourself.

Snacking to curb appetite until the next meal can be a benefit to children. However, researchers are still fighting hard to scientifically prove that healthy snacking plays a role in children's performance academically. Although my current research did not show results linking healthy eating to academic achievement, I hope that others with more scientific capabilities will continue to investigate this topic.

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Appendix A

STUDENT FOOD HABIT SURVEY

Survey: General Information

Code _____

Date _____

Who shops for food at your home? _____

Who prepares it? _____

What do you drink during the day? _____

How many times a day do you eat? _____

What do you usually eat? _____

How many times do you eat out during the week? _____

What is your favorite restaurant? _____

What is your favorite food to eat? _____

What is your favorite vegetable? _____

What is your favorite fruit? _____

Do you think it is important to eat fruits and vegetables? _____ Yes _____No

Do you think what you eat affects how you perform in school? _____ Yes _____No

The Impact of the Visual Arts on Reading and Writing for Middle School Students

Robert Jones

Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149)

has approved this research project # 09-187.

Introduction to the Problem

In 2006, the researcher took a graduate class that focused on teaching literacy to elementary-age students. This course introduced strategies for instructing the students using many different approaches to teaching. Taught by Professor Kay Cowan, one area of focus addressed using the visual arts to teach reading and writing skills. This approach was shown to have great results with elementary students. During the course of study, the researcher had also been quoted, on many occasions, variations on these words from Paul Schwartz, as quoted in the Annenberg Challenge (1998, ¶ 20): "Based on this year's fourth-grade reading scores, California is already planning the number of new prison cells it will need in the next century."

Much has been studied and written about the visual arts, and their impact on reading and writing performance in the early elementary grades. It is a widely-held belief among educators that reading and writing skills are pretty much set by the fourth grade. There is very little research applying this teaching strategy in the classroom to middle-school-age students. The researcher wanted to find out if measurable improvements could be achieved using these strategies with students from this particular student population. As a future arts educator, the researcher, additionally, wanted to see, first-hand, if linking the visual arts with other curriculum could enhance or improve student performance.

Area of Focus Statement

The purpose of this study is to determine if integrating the visual arts with reading and writing can/will improve both proficiencies for middle school students.

Review of Literature

Educators are always looking for new and innovative ways to teach their students. Over the last several years, there has been a movement to connect subject matter in new and inventive ways that will engage the students more completely in the learning process. One of these

approaches is to integrate the visual arts with instruction in reading and writing. But, some of you may be wondering if this integration is significant in any way. According to West, an arts-based education is important to all children and should be an integral part of their educational experience (2000). She further states that art teachers are teaching problem-solving skills that can be used across curriculum to address many learning strategies. This is important to know if we are to use the visual arts to teach and enhance reading and writing skills. Most people do not connect the visual arts with "thinking" (p. 177). According to Oddleifson, as quoted by West (2000), "The arts represent forms of cognition every bit as potent as the verbal and logical-mathematical forms of cognition that have been the traditional focus of public education. If schools began to work together to combine the four r's, and truly make learning an interdisciplinary event, the children will benefit greatly" (p. 178).

Finding ways to bring these disciplines together can be a challenge for teachers, but it is not impossible. Bartel (2005) found that, in one classroom in Charleston County, South Carolina, it wasn't using the arts across the curriculum that was unique, but it was how the teachers used the arts as a way to connect reading and writing in a viable, meaningful way for their students that was of importance. Teachers in this classroom taught the children how to "read" the paintings to express emotions and ideas. From this initial scaffolding, the students then were able to translate these emotions and feeling into word pictures within the context of writing assignments.

But, even with these studies that support integration of the visual arts into core curriculum, as a whole, the visual arts have, at best, a marginal position in most school systems (Eisner, 1999). "The idea that the arts are not assessable is simply an indefensible romantic

metaphor that has no bearing in fact." (p. 136). So now that we know the value of linking the arts with reading and writing the questions becomes how do we do it?

According to Ayers, Richardson, and Sacks (2003), bringing these three disciplines together is not difficult, even for those without an art background. You just have to be willing to think a bit outside the box, yourself, when preparing integrated lessons for your students.

Educators Kay Cowan and Peggy Albers (2006) took this approach further with their study in which they defined social semiotics as a study of sign systems that include art, reading, written and oral language to convey ideas and experiences. Cowan and Albers state: "We introduce students to elements of art including line, shape, color, and design. Then using a color wheel we introduce shades of color and feelings of emotion associated with various colors," (p. 127). From these initial exercises, the authors then relate these art explorations with word matching to convey the same feelings as the colors, which then guide the students into a writing assignment about feelings and emotions.

All these strategies and information are helpful for the educator looking for ways to integrate the visual arts into their reading and writing curriculum, but all of these studies focus on the lower elementary grades. The majority of studies on this subject focused on preschool through third grade. Very little was available on applying this type of instruction to the middle school grades. Wright and Sherman (1999) were able to combine all three disciplines in a meaningful way for their middle-school-aged students by taking them through the process of creating a comic strip. They found that this exercise worked well because it combined the visual arts, reading, and writing effectively into one cohesive experience for both student and teacher.

Data Collection and Results

Data Collection

The researcher will use quantitative and qualitative data. First, the researcher will use a pre-survey/post-survey (see Appendix A) to determine levels of exposure to the visual arts within the reading and writing curriculum. The surveys will allow the students to respond, with regard to their interests or preferences for instruction in reading and writing, as related to, or combined with, the visual arts. The researcher will introduce the arts-related lesson as an active observer, noting student engagement, participation, and attitudes. A post-lesson survey will also be administered to gauge any changes in perception or attitudes toward integration of the visual arts into reading/writing lessons. The "Cloze Procedure" (see Appendices B and C) will also be used as a tool to gauge differences in comprehension between the control and intervention groups in this study. These measurements will be administered twice to both the control and intervention groups. A writing assignment will also be given and evaluated (see Appendix D).

Subjects. This study will be conducted at a suburban middle school in North Georgia. Specifically, the subjects will be two classes of seventh-grade students. A total of 32, seventh-grade students will comprise the research sample for this study. This study will have one class as the control group and one class as the intervention group.

Methodology. This study will be conducted during a 1-week period of classes at the school. On day 1, both the control and intervention groups will be given the pre-survey, to be completed with help from their parents and returned the next day.

On day 2, the integrated lesson will be introduced to both classes. Together we will read "*Masha and the Firebird*" (Hill, 1999). This is a richly-illustrated book with vibrant

colors and visually-stimulating pictures. The narrative is also easy to follow and understand, at this grade level.

The control group will read the story aloud together, without any of the illustrations provided to enhance or explain the story being read. The intervention group will also read the story aloud together, but, they will have a PowerPoint presentation that provides all the illustrations and visual enhancements from the book, as we read it.

Both classes will read the first half of the story on day 2. After reading half the story, both groups of students will complete the Cloze Procedure 1 (see Appendix B). The researcher will compare results for the two groups of students, to determine if there are any measurable differences.

On day 3, both groups of students will discuss the story, and write down predictions of possible outcomes or endings for the story. These will be used later to assist in the writing component of the lesson. After the discussion and writing exercise, both groups will finish reading the story, as previously described, and complete Cloze Procedure 2 (see Appendix C).

On day 4, students in both groups will build on their knowledge from reading the story and write: "What happens next…" to characters from the story. The researcher will read and evaluate these using a rubric (see Appendix D) to determine any measurable differences in performance/proficiencies between the control and intervention groups.

On the final day, the researcher will administer the post-survey (see Appendix A) to gauge any changes in attitude about the visual arts, when combined with reading and writing.

Results

In reviewing and interpreting the results, some trends manifested. First, we need to look at the pre- and post-survey results for both groups. Reviewing the pre-survey results, the researcher found that both groups of students had similar opinions regarding reading and writing assignments. In general, at least half of the students disliked or did not enjoy reading and writing assignments. Additionally, both groups had little or no exposure to the visual arts, in conjunction with these two subject areas. These trends or opinions did not change significantly in the post-survey.

The other instrument used to measure student understanding and comprehension is the rubric (see Appendix D), which is used to evaluate the writing assignment for both groups of students. Although the sample may not be large enough to be statistically significant the researcher did find trends within each group that may give support to further research being done at the middle school grade level.

Using the rubric, the researcher found that the control group, as a whole, did average several points below the scores of the intervention group. The control group average score for the writing assignment was 16 points. Although some students achieved higher than this, the trend was toward lower scores. The interventions group average score was 22 points, with nearly one-third of these students scoring the maximum points available for this assignment.

Conclusions and Recommendations

It is also important to realize that these surveys and the writing assignment do not have the validity of statistical tests, but the results still may allow inferences to be made from the outcomes. In order for this study to have any real statistical validity, it would need to involve a much larger sample population. In general, the results, on the surface, would seem to

indicate that the intervention group did perform better that the control group, within the context of this project.

Before too much emphasis is placed on these results, it should be noted that both of these classes had diverse student populations, with learners at many different levels of ability and performance. It should also be noted that, for at least half of the students in these two groups, English is not their native language. These two factors may have impacted research results.

In talking with fellow educators and the cooperating teacher, the consensus is that integrating the visual arts into reading and writing lessons is one of many strategies that can enhance and improve performance across these subject areas.

Although the researcher is not aware of grant money available for further study, this type of lesson integration is some that should be examined further. Any innovations that can be made to improve educating diverse student populations are something this researcher would fully support.

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Appendix A
Visual Arts Integration Survey for Students

1. What do you like most about your reading lessons now?

2. What do you like least about reading lessons?

3. What do you like most about your writing lessons now?

4. What do you like least about writing lessons?

5. Do you think reading is hard or easy?

6. Why? (Refer to question 1 or 2, depending on response)

7. Do you think writing is hard or easy?

8. Why? (Refer to question 3 or 4, depending on response)

9. What is your average reading grade?

10. What is your average writing grade?

11. Which is easier for you to read and understand? (circle one)

    a.) A story with no pictures?

    b.) A story with pictures?

12. When you read, do you imagine the story visually or as a moving picture? How do you "see" the story?

13. When you write, do you imagine what you are writing about as a picture or visually in some way?

14. What do you enjoy most about Art class?

15. What do you like the least about Art class?

16. Do you think Art class could be used to improve your grades in reading and writing? (Why or Why not?)

Student # _____

Appendix B

Cloze Procedure 1 "Masha and the Firebird"

Student #_____

She started to paint the egg, covering its shell with mosses and lichen. Hidden amongst tiny leaves, small flowers _____ to bloom and mice and squirrels peeped _____ roots of trees. Finally, in the centre of _____ egg, she painted a very large grey _____. She could almost hear him padding _____ into the forest.

Following the light _____ the feather, she took the egg _____ to the Firebird. Together they went _____ the very heart of the forest _____ the Firebird placed the egg deep _____ the hollow of a mossy bank. _____ that day, when Baba Yaga was _____ collecting mushrooms, she passed close to _____ egg of the Earth, but she _____not see it.

When the firebird _____ that the plan had worked, it _____ Masha the egg of Water. As _____ held it in her hands she _____ hear the sound of water rushing _____ falls and the low, soft murmur _____ a faraway sea.

Appendix C

Cloze Procedure 2 "Masha and the Firebird"

Student #_____

When Masha opened her eyes, the night had fallen. She was lying all alone in _____ small clearing. Baba Yaga and her _____ had vanished and there beside her _____ the cold, grey ashes of the _____ and its egg. Sorrow overwhelmed the _____ girl and she lay on the _____ earth weeping until the tears would _____ no more. At last, far above _____, the first rays of the morning _____ awoke the eastern sky. Then another _____ caught Masha's eye.

A small flame _____ from the ashes. It was followed _____ another. The fire grew hot and _____, and then came the sound of _____ egg cracking open. In a flurry _____ fire and feathers the Firebird was _____ anew from the flames!

Masha _____ and clapped as the Firebird flew _____ her head, its shimmering tail feathers _____ her cheek. Finally, the Firebird flew _____ into the morning sky, and at _____ feet Masha found a tiny box _____ paints.

Appendix D

Rubric: Writing Prompt – "Masha and the Firebird"

Teacher Name: **Bob Jones**
Student Number: _____

	Exceeds 25 pts	**Meets 20 pts**	**Below 15 pts**
Quantity: Did you write the amount of assigned text?	**Exceeds** 8 paragraphs 6 + sentences per paragraph	**Meets** 8 paragraphs < 6 sentences per paragraph	**Below** 6-7 paragraphs < 6 sentences per par
Organization: Does the story make sense? Is it properly sequenced?	**Exceeds** All information presented logically and in the proper sequence.	**Meets** Most information presented logically and in the proper sequence.	**Below** Some information pre logically. Sequencing accurate.
Content: Does the story come alive and hold your interest?	**Exceeds** Descriptive details throughout, characters are well thought out.	**Meets** Some descriptive details in each paragraph, characters are somewhat realized.	**Below** A few descriptive det characters are not ver developed.
Mechanics: Did you use full sentences? Correct grammar and spelling?	**Exceeds** Complete sentences, punctuation and capital letters for each sentence, less than 6 spelling errors throughout.	**Meets** One run on sentence or fragment, punctuation and capitals throughout, > 6 spelling errors.	**Below** Some run on sentence fragments, punctuatio capitals missing, > 7 spelling errors.

Date Created: **Nov. 23 11:55 pm (EST)**

Single-sex Classrooms in Coeducational Schools: Are They Living Up to the Potential Suggested by Research?

Channa Elyse Leighton

Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149) has approved this research project # 10-008.

Introduction to the Problem

Between undergraduate and graduate school, I moved to Tennessee and became a substitute teacher. During this stint, one of my assignments landed me in a middle school that was experimenting with single-sex classrooms within a coeducational school. The school had been selected by the county to participate in this experiment. Everyday there, I noticed that many students and teachers were simply not fond of the situation. The first teacher I substituted for warned me about it in the lesson plans for the day. The students were distracted by their resentment for the entire situation. They felt they were missing out on a social experience that all other public schools were getting, but, more interestingly, they were upset because they felt like "guinea pigs" forced into a situation where not even the experts knew the outcome. At the very same time, many of the teachers were just as upset. While they admitted that the logic came from a place of good intentions, they felt like they were not carrying out this logic. That is, for the most part, they were not being asked to teach differently to the boys versus girls. They also felt like the single-sex classrooms were throwing off a much-needed balance that they had become accustomed to within this age group. As a substitute, I, too, was not a fan of the experiment, by the end of the day, for several reasons. The problem seemed to lay in the fact that the faculty and students were so unhappy that it had become a distraction and hindrance in the educational process it aimed to supplement or improve. Much student energy was being focused on the experiment, and, after speaking with teachers, it seemed they were not given the tools or resources they needed to conduct their classrooms according to the studies which got the experiment implemented, in the first place: Research has found that boys and girls learn in different styles and at different rates, and many of these differences vary from one subject to the next (Belcher, Frey, & Yankeelov, 2006).

Listening to the students, I understood and empathized with their complaints. There was a social experience that was supposed to go along with middle school that they had been expecting, and it was taken from them. They were upset, and taking organized steps to fight the experiment that was scheduled to continue the following year. This animosity developed attitudes toward learning that were more powerful and more prevalent than I had experienced in my other substitute assignments that semester, and shifted student focus away from the education teachers were supposed to be providing them. However, my concerns laid more heavily along the same lines of those of the school's teachers. The balance within the classroom was a mess. There is an underlying social awkwardness that works to our advantage in the middle-school-age bracket, especially. The fear of embarrassment in front of members of the opposite sex hinders a lot of negative classroom behavior. When a teacher is presented with a class of 20, 13-year-old-girls, shyness leaves the building and is replaced by an almost Darwinian atmosphere full of cliques and power struggles so severe, it leaves one deeply saddened for the social outcast. My experience with the classroom of boys was not quite as bad, but their education still seemed to be suffering from the pressure to be "too cool for school," so to speak, as many of them competed to be the most anti-school-work student they could be.

The entire experience began my inquiry about the relatively-new "hot topic" of debate in education. Reforms such as these are constantly coming through in waves with much research to back them. However, education has proven, time and time again, that just because something looks great on paper does not necessarily mean that it will work, or benefit the classroom, once implemented. The research shows that single-sex classrooms can have a positive effect on learning (Leonie, 1997), but the question becomes whether this type of program can successfully translate to all classrooms. There was research to support the "whole language approach," and

the same is true for "fuzzy math" and open-education theories, which all failed on a national level. This new focus on learner-centered education is bringing about many studies suggesting that teachers adopt a theory such as single-sex classrooms because it is another level of individualized education. But, does it have a place in education as a fixed norm across the board?

Purpose of the Study

The research will aim to explore how the experimental stages of this newly-implemented educational strategy are progressing. That is, what are effects of these single-sex classrooms? The purpose of the study will be to determine whether or not single-sex classrooms in coeducational schools are producing the desired results at a high enough level of perceived significance to possibly translate as the new norm for our middle schools in America. The major research question for this study is: Are single-sex classrooms in coeducational schools producing the desired, predicted results in this experimental phase? That is, is this going to prove to be another educational fad, or is it living up to its potential?

Significance of the Study

This study is important because of the current experimental phase of development of single-sex classrooms in coeducational schools. That is, there is a lot of research that has been conducted to prove that this should work. Enough has been done, in fact, to get a few schools across the country to begin implementing it on a trial-run basis. However, the experimental stages of any suggested reform are always critical, and, above all, controversial. Research needs to follow the movement, every step of the way, if it has any chance at making the desired difference it could theoretically make. The county involved in my study needs to be evaluating the effectiveness of the teaching strategy. Also, if it is not working, the sooner the "why" question is answered, the quicker it can be addressed. The results of this study can supplement

this type of investigation. That is, its aim to find out what exactly is happening in the experimental stages will help to answer questions about modifications, possible expansions of the program, and/or cancellations. Understanding what is going on, what is working and what is not, and the reaction the movement is getting versus the educational value, is going to be crucial in fixing problem areas and thus giving the idea any hope of being further implemented.

Definitions of Terms

As a part of this study, it is important to understand that the coeducational school refers to the conventional, public middle school in the sense that the boys and girls zoned to attend that school are the ones attending. The experimental stage, often referred to in the study, reflects the decision of this particular county, and many other counties, to choose a single school, or a few schools within the county, to implement single-sex classrooms on a trial-run basis. Also, when the study raises the question of how this translates, it is referring to the aspect that potential single-sex classrooms will or will not become the norm in our public schools. Furthermore, when the study talks about significant educational differences, it is referring to this through the lens of teachers' grade comparisons and students' perceptions of their academic competence. The term single-sex classroom implies that, even though the school consists of both genders, the classes are either all boys or all girls.

Review of Literature

Arguments Favoring Single-Sex Classrooms in Coeducational Schools

Much educational research has been conducted to support the theory that classrooms where only one sex is present help to create a learning environment that is very beneficial to the academic achievement of those students (Barton & Cohen, 2004; Calderwood, 1998; Mael, 1998). This education assertion is further researched and supported, with respect to increasing

female academic performance. That is, there are more research findings that suggest single-sex classes develop greater self-confidence and broader interests (Salomone, 2006). This is especially thought to be true in subjects where girls are generally accepted as inherently inferior, such as physics and mathematics (Bouffard, Roch, & Vezeau, 2008; Kessels & Hannover, 2008). The preliminary attempts at this research lead to the events of March 2004 where the U.S. Department of Education issued Title IX regulations that promised to provide public school flexibility in establishing single-sex classes and schools (Salomone, 2006; Spielhagen, 2006).

There is research that supports the benefits of these programs through a variety of theoretical assertions (Mael, 1998). Some of these common assertions are that single-sex schooling has positive benefits for the academic achievement of both sexes, single-sex schooling is positive for females in sex-typed subject areas, and single-sex schooling is beneficial for female career aspirations. The assertions continue as research supports that single-sex schooling is beneficial for positive sex-role attitudes and self-esteem, coeducational classrooms foster gender inequalities, coeducational classrooms are set up with a male achievement bias, and coeducational physical fitness programs adversely affect both sexes (Mael, 1998).

Research Conundrum

Research calls attention to the fact that educational research on single-sex classes and schooling is inconclusive and controversial (Arms & Herr, 2004). The research is commonly viewed as inadequate, and this is understandable, given the fact that federal policy banned these programs for almost three decades. The field for gathering data simply did not exist. What was available was largely from other English-speaking countries or from private, and, particularly, Catholic schools in the United States (Salomone, 2006). Since federal policy has permitted greater flexibility in separating the sexes in public school classrooms, the topic has become quite

the hot debate, and the research attempts have increased greatly, but the field is relatively new. Hard data on how the choice of single-sex or coeducational schooling affects achievement are in short supply (Spielhagen, 2006).

As previously noted, some research shows positive effects of single-sex classrooms, and, until recently, this research has remained controversial and limited. However, and strengthening the topic's position as controversial, some research has found little or no significance in single-sex classrooms (Bouffard, et al., 2008; Gray & Wilson, 2006). One such study found that girls' motivation and perceived support from parents and teachers are unaffected by the type of school setting in which they are involved. This study admitted that they were in direct opposition to those who argue that a segregated environment is beneficial to girls. They state, instead, that their findings support the minority opinion in educational research and data that single-sex schooling has no significant impact (Bouffard, et al., 2008). Another study, evaluating qualitative data in one middle school to find the effects of single-sex classes, concluded that these classes do not improve classroom behavior, nor do they raise academic performance (Gray & Wilson, 2006).

Program Context Matters

These findings lead not only to controversy, but also to the view that single-sex classroom credibility is very situational and context dependent. That is, researchers are beginning to consider the extensiveness to which a lack of professional development and teacher training, prior to program implementation, affects the success of the program. One pair of researchers, who looked at several case studies for the purpose of being able to compare them, found that single-sex classrooms were much more successful and beneficial to the students when wide-ranging staff development programs existed (Arms & Herr, 2006). Without ongoing staff

development or conversations regarding gender, there is nothing to interrupt the teacher's gendered assumptions and ideologies (Arms & Herr, 2006). Based on these findings, other researchers were able to assemble a list of criteria that should exist if the program is going to experience success (Warrington & Younger, 2006). The criteria consisted of senior staff members within the school fully embracing the single-sex approach; implementing alternative teaching and learning strategies that engage and motive the students; and the presence of a willingness to maintain, monitor, and evaluate the single-sex approach as a mode of organization through time (Warrington & Younger, 2006).

Furthering the newly-theorized "school dependant" factor, researchers are also starting to draw attention to the significance of the experimented programs versus the voluntary ones, finding that the latter experience much more success (Salomone, 2006). Assigning students at random to unproven educational programs raises serious ethical concern, so, therefore, truly randomized studies on single-sex education are few and far between (Salomone, 2006). Research questions surrounding the ethics of such issues as social adjustment and growth inadequacy are becoming quite a concern in this field of research. That is, especially in the experimental programs, social adjustment has been a widely ignored issue (Spielhagen, 2006), though research has proven that a complex relationship between classroom gender composition and children's peer relations does exists (Barton & Cohen 2004). Classroom gender composition is relevant to the social development of children currently being evaluated in single-sex environments (Salomone, 2006). Therefore, it is important for educators to thoughtfully consider their decision to separate girls and boys, and that they articulate clear rationales and defined goals, based on what we now know, and continue to learn about gender and child development (Salomone, 2006).

Teacher and Student Perceptions of Single-Sex Classes in Coeducational Schools

Teacher perceptions have been one common method of evaluating the success of single-sex classrooms in coeducational schools (Arms & Herr, 2004; Gray & Wilson, 2006; Warrington & Younger, 2006). Gray and Wilson (2006) used this as a primary method in evaluation of a single-school program, and found single-sex classrooms to be largely unpopular among teachers. It is significant to note that these teachers reported adequate training and understanding of the evidence of proposed benefits, however, after 4 years of implementation, 71% of teachers wanted to return to coeducational classes and only 26% of teachers would recommend it to another school. The teachers also reported a large amount of restructuring stress. Among the teacher participants in this study, it was a popular opinion that single-sex classrooms unleveled the social balance, and increased rough-housing among all-boy classes was reported, along with increased moodiness, bickering, and attitude problems in all girl classrooms. This study further concluded that this could have circular implications. That is, any program without teacher support, and a lot of goodwill initiatives, is set to fail (Gray & Wilson, 2006).

Studies also show that teachers felt they "couldn't let up for a minute in all boy classrooms without things getting wildly out of control" (Arms & Herr, 2004, p. 545), and that students were commonly more enthusiastic than teachers (Warrington & Younger, 2006). Both teachers and students reported more positively when they were in a voluntary situation or program versus an experimental one (Arms & Herr, 2004).

In contrast to the teacher perception studies, student perceptions are another common method of evaluating the success of single-sex program and project a significantly more positive reaction or opinion, more often than that of teachers. Research shows that students have reported a positive experience when the classes are designed to address students' developmental needs.

The opposite is true when teachers are not taking the time to take such behavior into consideration (Spielhagen, 2006). Although some students reported increased stress levels attributed to restructuring the classroom composition (Gray & Wilson, 2006), and some reported an increased inclination to "act out" in the classroom (Arms & Herr, 2006), a majority were optimistic in their responses to questions about single-sex classrooms and their experiences. Many boys and girls valued the opportunity to be taught in single-sex classes for some subjects (Warrington & Younger, 2006). Students from the Warrington and Younger study purported that the single-sex class provided a protected environment conducive to the learning of both girls and boys because it is insulated from the distractions and off-task behavior of the other sex. These students also thought there was less harassment and potential embarrassment, and that confidence can be built up. They further noted students can be encouraged to participate more constructively in lessons (Warrington & Younger, 2006). Confidence should not be underestimated when it comes to positive academic possibilities. From the research discussed, there are a lot of factors to consider when evaluating the success of one of these single-sex classrooms in a coeducational school.

Evaluating the Research

In summary, the field of research investigating single-sex classes in coeducational schools may have been limited and restricted in the past, but it has recently become a hot topic of debate, and this field is quickly on the rise. The studies discussed show that there are many existing opinions regarding the topic of single-sex classrooms in coeducational schools (Barton & Cohen, 2004). Some research displays positive academic outcomes for student success where these programs are being practiced (Barton & Cohen, 2004; Calderwood, 1998; Mael, 1998). Other research shows little or no significant difference in academic achievement in single-sex

classrooms (Arms & Herr, 2004; Bouffard, et al., 2008; Gray and Wilson, 2006). Research is evolving to answer ethical questions such as social development, and many studies are weighing teacher and student perceptions (Salomone 2006; Spielhagen, 2006). Most research agrees that, where these programs are implemented as a form of choice, and teacher training is adequate, they are more successful (Arms & Herr, 2006; Gray & Wilson, 2006; Warrington & Younger, 2006). Based on this research, it can be concluded that single-sex program success is often dependent on a number of variables, and, further, that success stories can be limited to a particular situation or school.

Data Collection and Results

Purpose of the Study

The purpose of the study will be to determine whether or not single-sex classrooms in coeducational schools are producing the desired, predicted results. It will also aim to discover what context variables help it translate successfully from school to school.

Research Problem

Research question. Are single-sex classrooms in coeducational schools producing the desired, predicted results?

Participants and site selection. The participants involved in the study will be sixth-, seventh-, and eighth-grade teachers working at one middle school which has been selected by the county to participate in the experiment trial period of single-sex classrooms in coeducational schools. The study will examine teacher perception after a 2-year, trial run period. It is significant to note that the sixth graders at the school came into this experiment after it had been in progress for 1 year. The seventh graders came into the school as the experiment was beginning, and the eighth graders were students at the school when coeducational classrooms

existed and are now in their second year of the single-sex classroom experiment. Therefore, these teachers have a lot of data to evaluate daily and consider before answering questions. Their feedback is critical at this stage. According to the county's department of education Web site, the school is 70% white, 22% African American, 6% Hispanic, 1% Asian, and less than 1% Native American. The average classroom has 18-23 students, and, on average, reflects the school demographics. The school has 695 students and 40 instructional classroom teachers. The county considers the school to have a moderate to high level of discipline problems. The school only had 12% of students test below both the proficient score in math and 12% in reading in 2006.

Data Collection

Instruments/Materials. Materials from the observational data include a Lickert scale survey for the teachers. For inquiry data, the researcher used this survey to generate the teachers' perceptions of student attitude, success, and difficulties as this relates to the effectiveness of the single-sex program. The survey focuses on teacher perception, but tries to investigate the nature of student perception through the lens of a teacher, as well. This such as questions including, but not limited to:

Please rate the degree to which you agree or disagree with the following statements. Use 1 to indicate you strongly disagree with the statement and 2 to indicate that you slightly disagree. For the purposes of this study, use 3 to signify an undecided agreement level with the statement. Use 4 to represent a slight agreement, and 5 to indicate that you are in strong agreement, with the statement. If, for any reason, the statement does not apply to you, please mark N/A, for not applicable.

- Single-sex classrooms are making a positive difference in my students' education.

- Single-sex classrooms are less stressful that traditional coeducational classrooms in reference to classroom management.
- In my single-sex classrooms, my students' activities are completely different for boys than they are for girls.
- I received adequate training and professional development to prepare me to teach to each gender effectively.
- My students are overwhelmingly distracted by the implementation of single-sex classes.

The survey will include a space for the teachers to give additional feedback and state their overall opinion(s) about single-sex classrooms.

Procedures. The researcher conducted this study over 7 weeks. The teachers were asked to complete the surveys upon arrival. They were placed by the researcher into the teachers' mailboxes. The teachers were assured their names would in no way be attached to the surveys, and, therefore, they should feel free to answer honestly. The only personal identification requirements were gender and number of years teaching. In fact, the surveys required no form of identity, and no one other than the researcher was permitted to view the responses. After the data was collected, the researcher was ready to review and analyze the information.

Data Analysis

Major themes evolved from the data collected. After the survey responses were read thoroughly, they were grouped into themes that evolved from the data. It will be important to look at school-wide trends when referencing the Likert scale. In what areas were the teachers split versus stacked? These trends will develop naturally at the lowest level of analysis of the data. That is, what were the results of the survey?

Limitations

The major limitations are time and scope. The survey looks at one school, one time. The demographics within the school are not necessarily reflective of the nation's demographics. A significant amount of the findings will be based on teacher perception of student perception, and this may very well prove to be incorrect or in direct opposition to teacher perceptions. The study is being conducted by one researcher and some of the data is interpretive. The study does not measure any changes in students' test scores precisely; it simply relies on teacher perceptions of academic changes as indicated on the Likert scale surveys. Further, this study is only indicative of this particular school and it is not necessarily true that the results will translate to other schools. This is especially true given the recent research on context dependency of single-sex classrooms.

Results

The following data show the results of the surveys (see Figures 1-20). Each chart represents the survey response across the school, as a whole. Each of the figures represents one question posed to the faculty. It is important to note that only 14 surveys were returned for analysis.

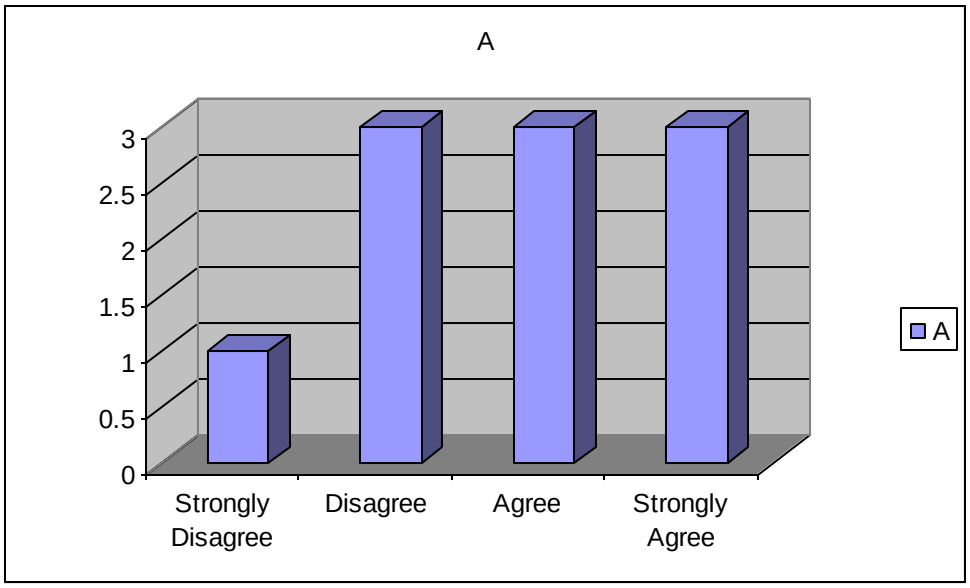

Figure 1. Question A: My students performed better academically in the single-sex classroom setting.

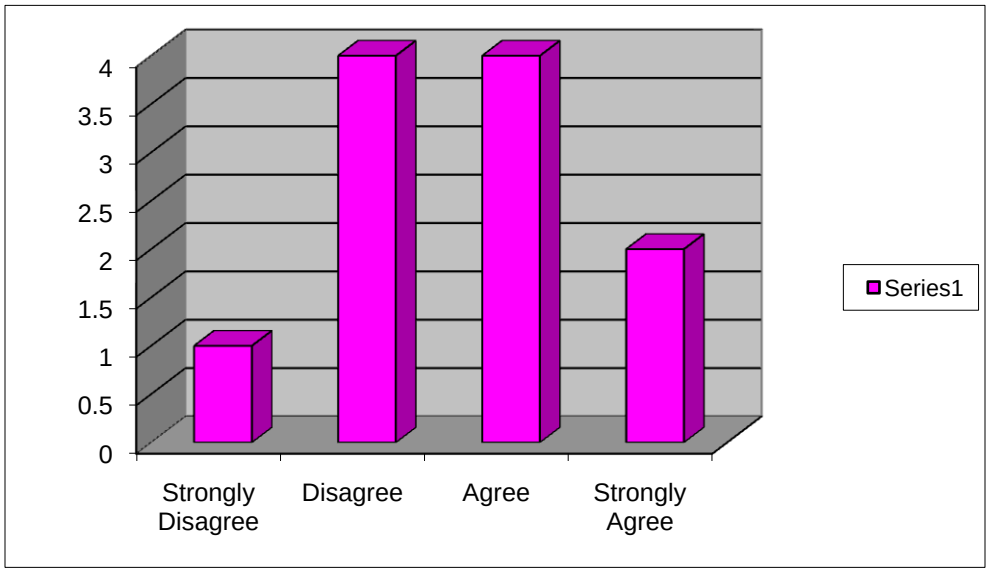

Figure 2. Question B: More learning took place in the single-sex classroom than in co-educational classrooms.

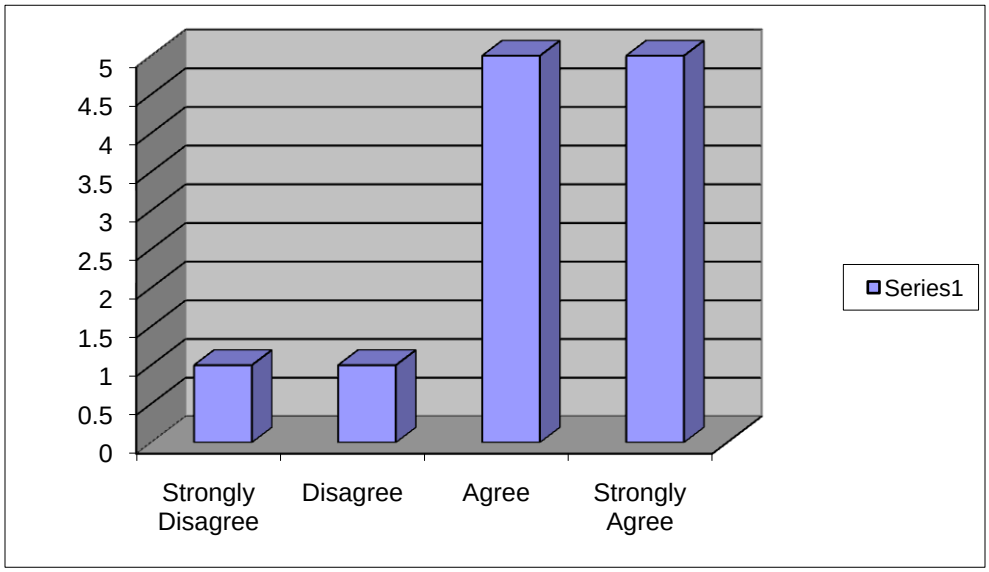

Figure 3. Question C: Females were more confident in the single-sex classroom setting than coeducational settings.

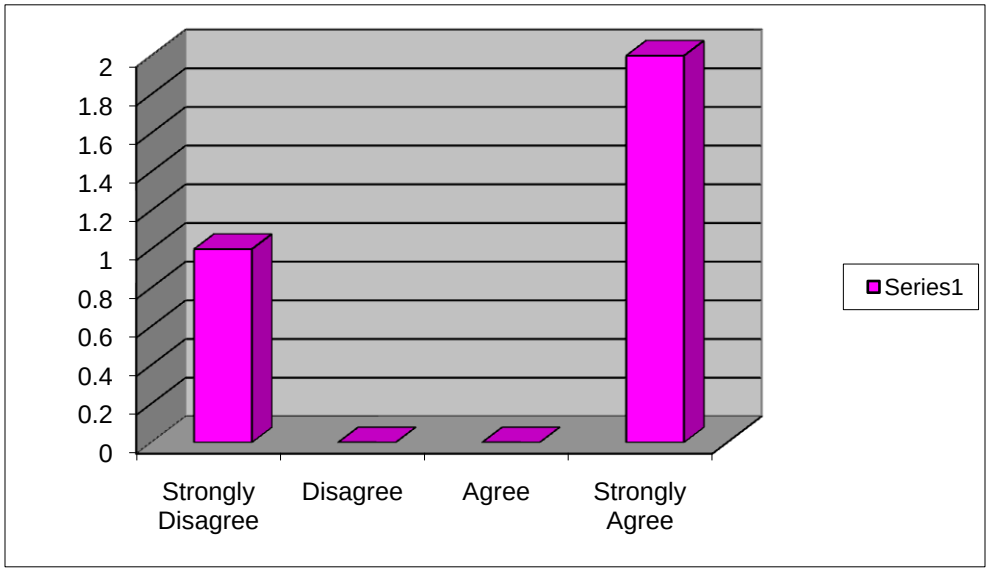

Figure 4. Question D: Male students did make more contributions in language arts.

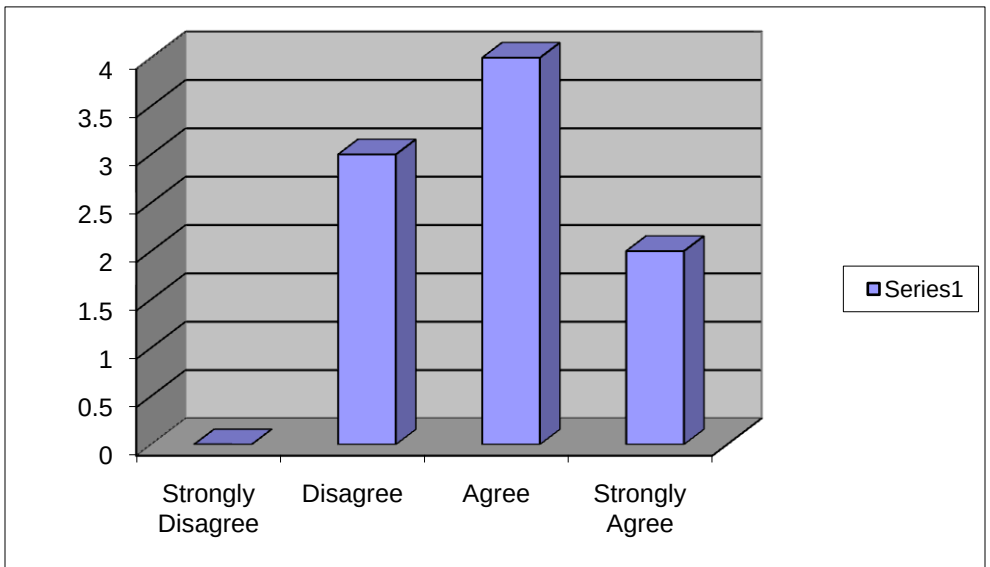

Figure 5. Question E: Female students did make more contributions and efforts in math and science.

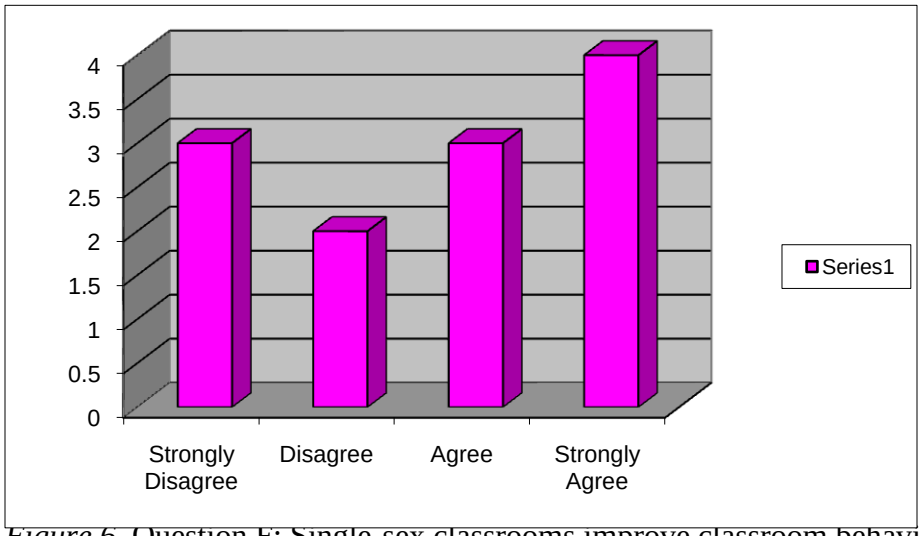

Figure 6. Question F: Single-sex classrooms improve classroom behavior and make classroom management easier.

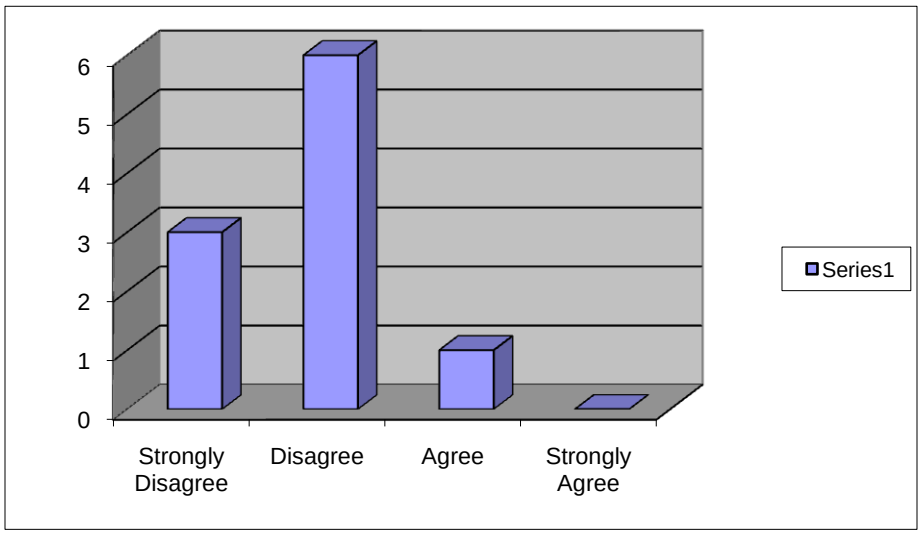

Figure 7. Question G: Single-sex classrooms made no relevance in academic performances.

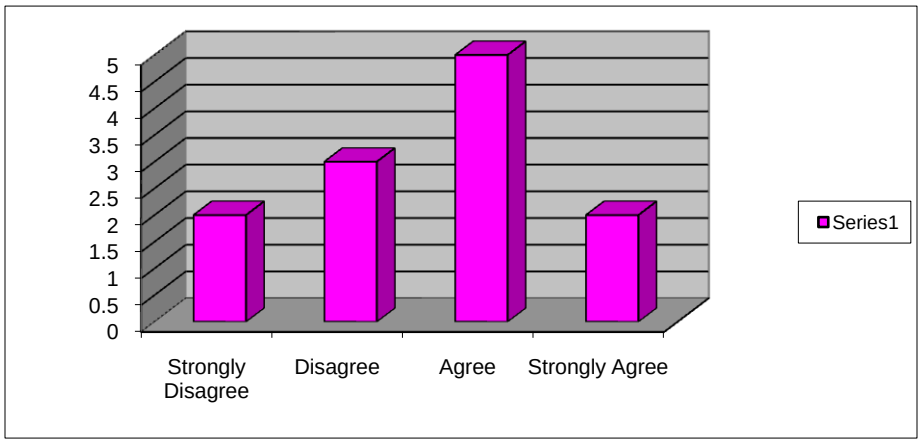

Figure 8. Question H: As a teacher, I was making significant lesson differentiations for strategies for my male classes and strategies for my female classes.

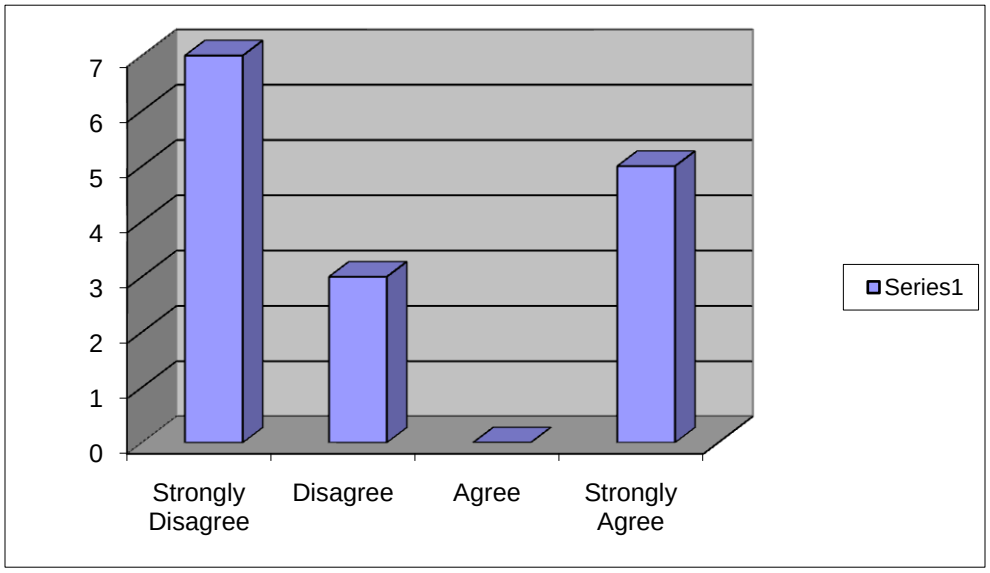

Figure 9. Question I: Our staff had adequate professional development and/or training on teaching strategies for single-sex classrooms.

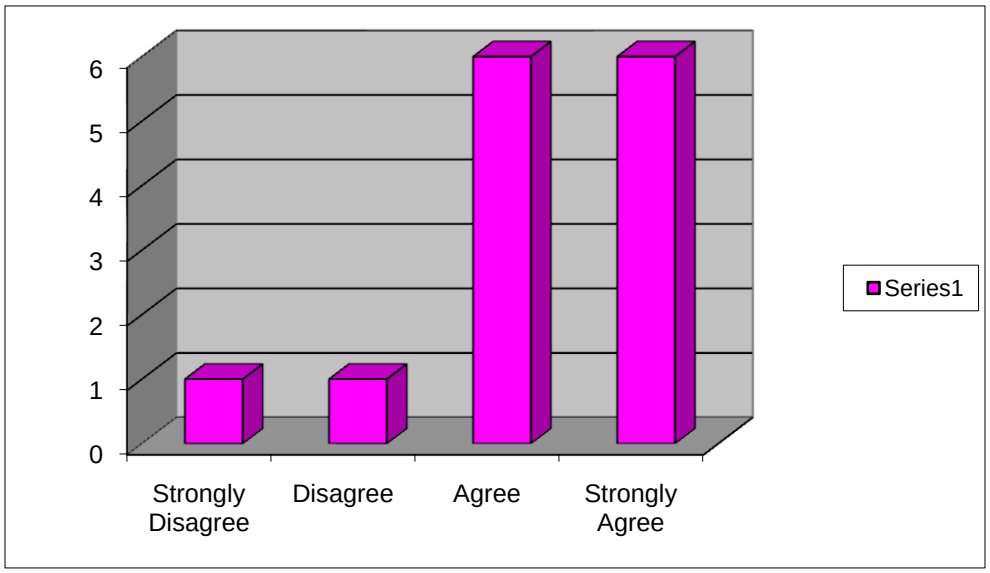

Figure 10. Question J: I would have liked more training and I feel it would have improved the success of the trial.

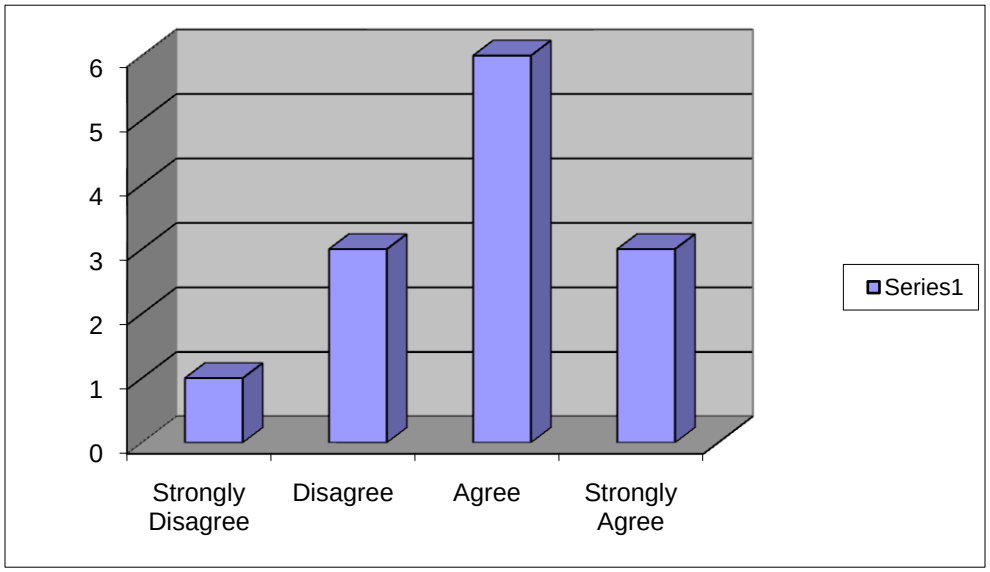

Figure 11. Question K: I agree with the research that claims to have produced evidence that this is an ideal strategy.

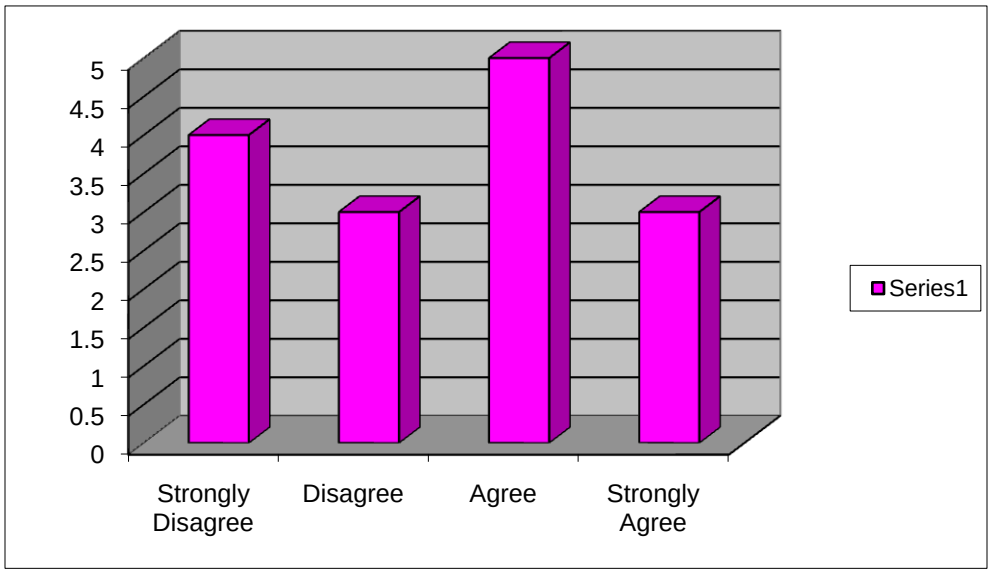

Figure 12. Question L: I would probably work better at a different school or a different age group.

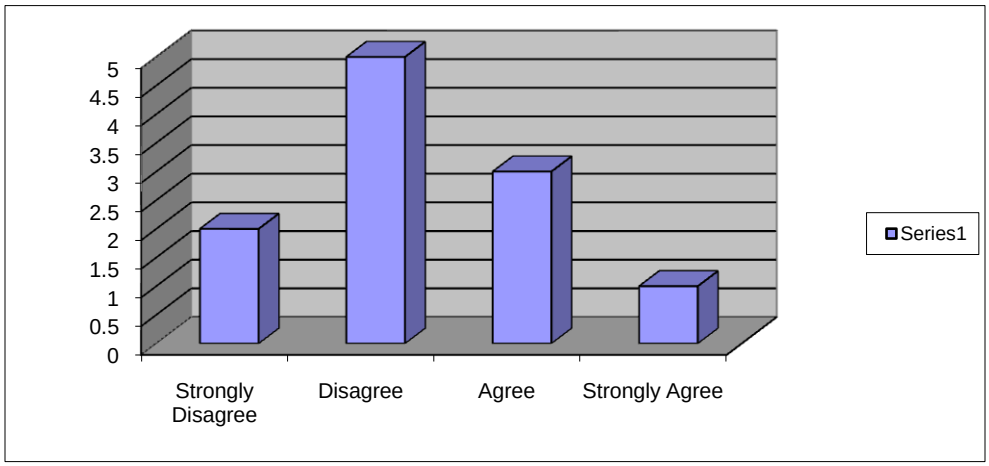

Figure 13. Question M: Classroom gender composition is relevant to the social development of children and single-sex settings hinder this.

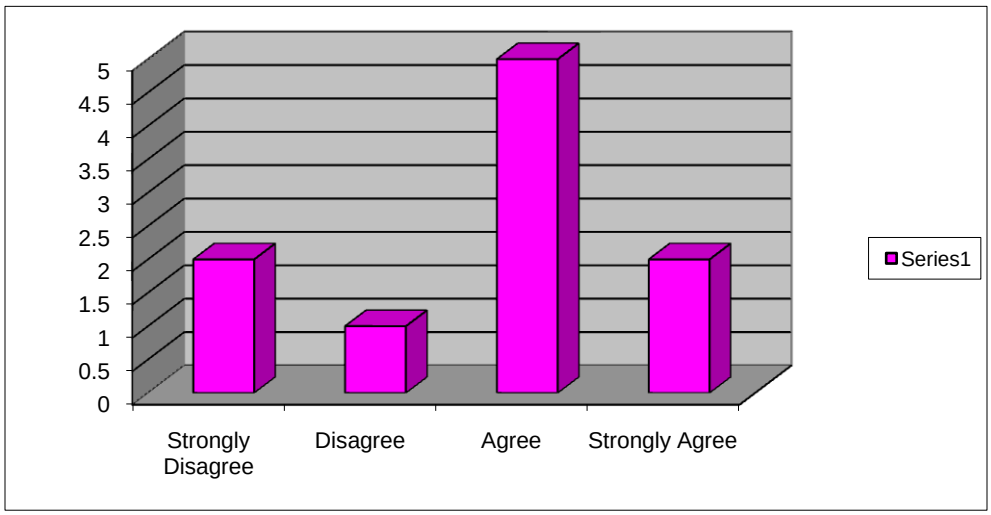

Figure 14. Question N: Single-sex classes would have worked better if more teachers would have been willing to fully participate enthusiastically.

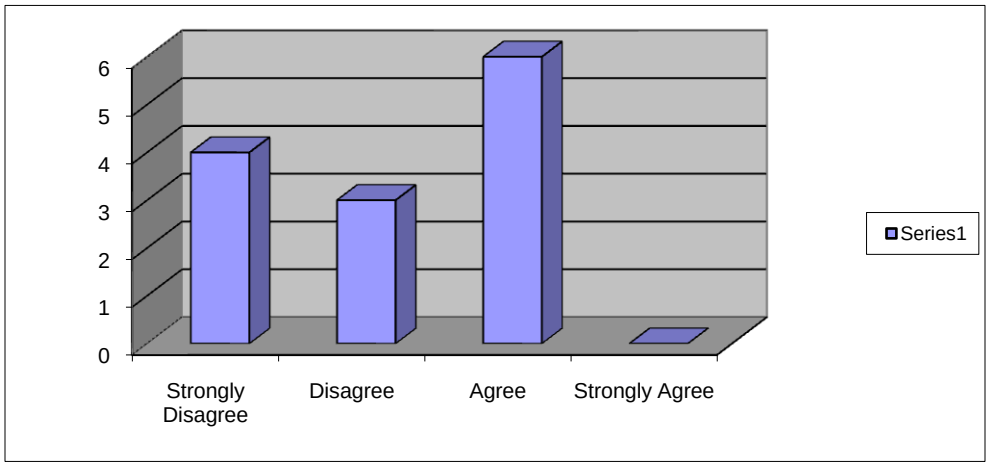

Figure 15. Question O: Single-sex classrooms were more stressful than traditional ones.

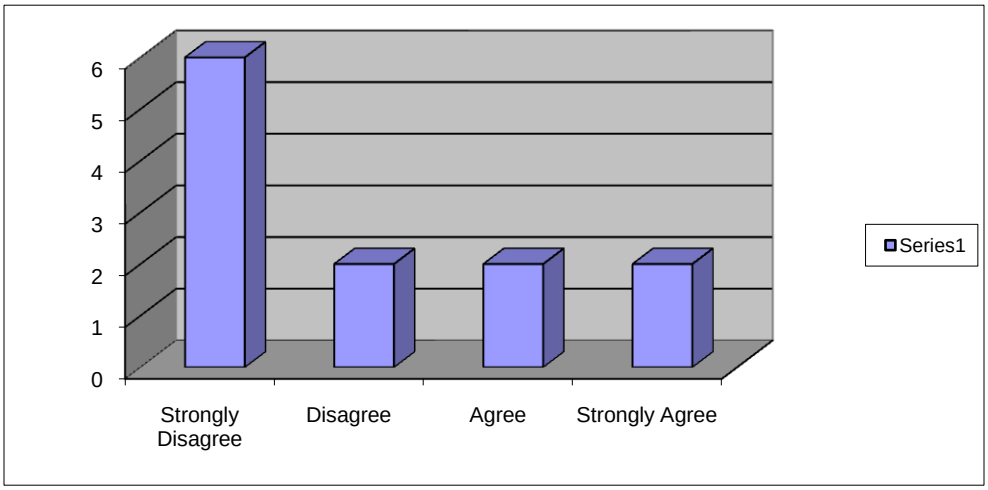

Figure 16. Question P: Males rough-housed more in single-sex classrooms.

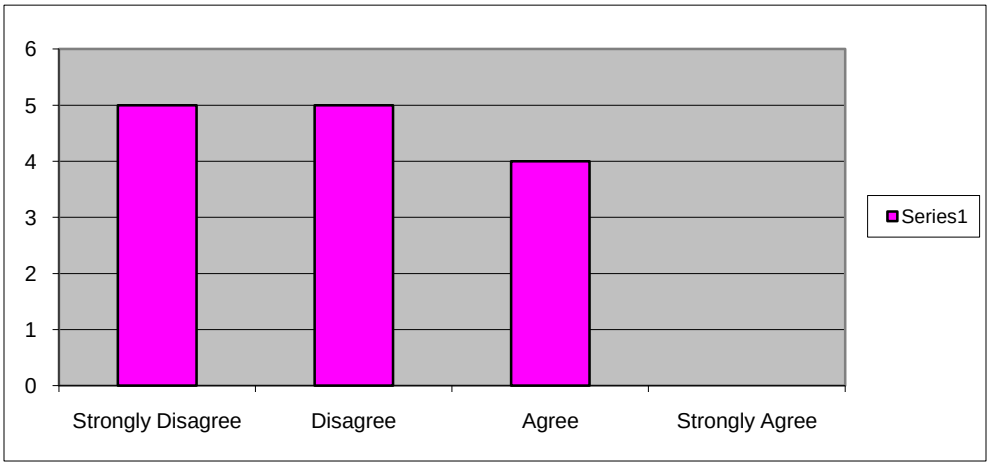

Figure 17. Question Q: Girls were more sassy in single-sex classrooms.

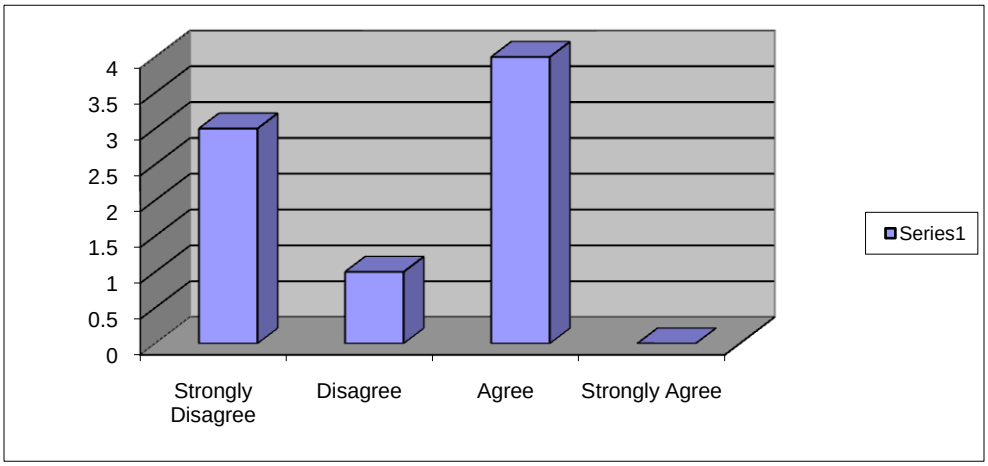

Figure 18. Question R: A voluntary single-sex classroom setting would work better than an experimental one.

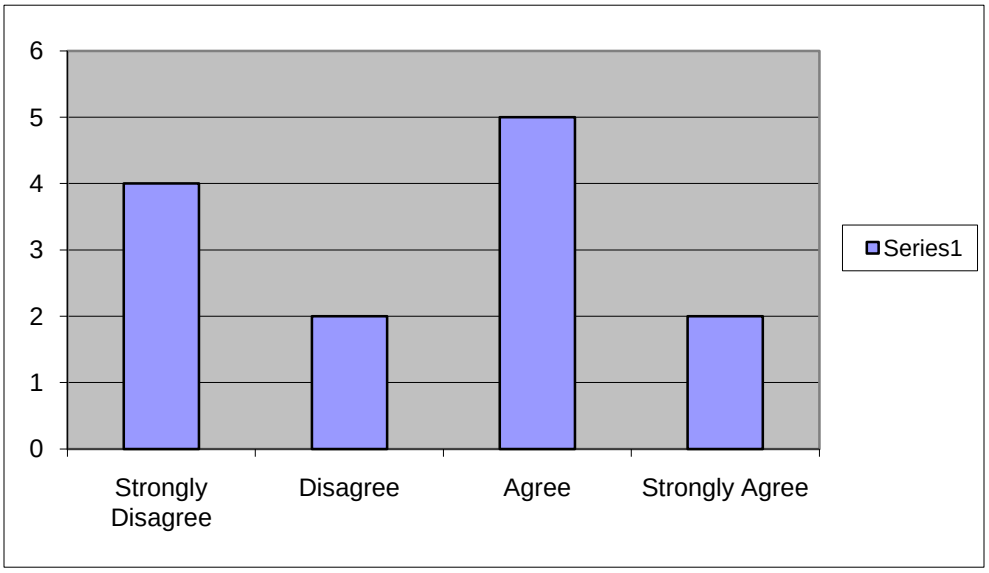

Figure 19. Question S: My students enjoyed the single-sex classroom setting.

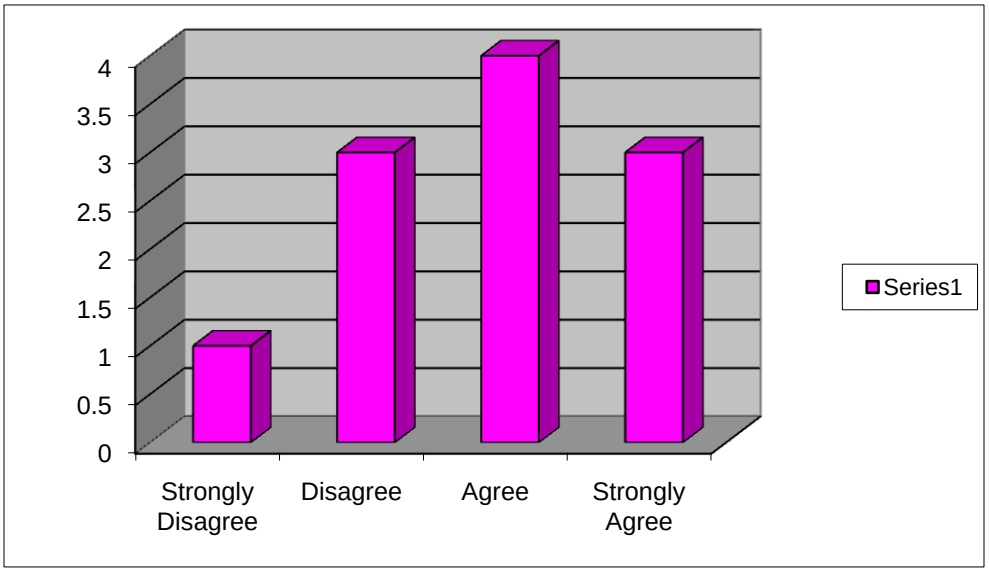

Figure 20. Question T: My students were academically more confident in a single-sex classroom setting.

Conclusions and Recommendations

When reflecting on the data, the number that jumps off the page is the response to question G. If the majority of the faculty feel that they are in disagreement with this statement, then that is a starting point to say that it can be concluded single-sex classrooms make a difference. Concluding what the difference is, or whether it is positive or negative, becomes

much more complex. The numbers in the first five questions reflect the research. That is, most teachers felt it was helping the academics; females were more confident, especially in math and science; and males contributed more in language arts. However, the specific numbers show that, while it was a minority that differed from this opinion, it was a significant minority.

Although the data for question H is slightly favorable, it is overwhelming that so many teachers were willing to admit that in the 2-year trial, they did nothing, or very close to nothing, in the form of differentiation. If this many teachers are not concerned with research, or individualized learning, or gender-based strategies, then it is safe to say it's not going to work. The exact same thing is true for the next four questions. The data falls directly in line with the problems stated from the research at the beginning of this paper. That is, teachers need to have to tools to implement this correctly. Many teachers who added additional comments to the surveys stressed this. One teacher said, "I didn't do a single thing to change my strategies. I never heard this was part of the package until the trial was over." This speaks volumes to the could haves, would haves, and should haves that the other teachers brought up in their comments. Question K stands out because more than one teacher said they did not know there was such research. This is a very small school. How could any program of such significance be implemented successfully if teachers are not first on board, equipped, and prepared?

The second part of the survey aims at getting to the social issues and teacher perceptions of student perceptions. It can be concluded that the social imbalance observed initially was not the case, based on these numbers. The specific gender management issues were almost non-issues at this school, and the majority of teachers disagreed with a hindrance in social gain theory. The problem from this half of the survey arises in question S. Even though the teachers did not indicate, based on this survey, insight into a why, they definitely were in agreement that

the students did not like the single-gendered classes. If a student does not like a situation, that fact, in and of itself, could hinder progress. This research falls short in getting to the nature of the why because the research indicated problems seem to be a non-issue. A follow-up project should definitely address this huge question. Why do the students hate it?

The survey also ends on a positive note. Question T concludes that the students were more confident. However, this leaves a disconnect between said "happiness" and students gains and/or performance. It would not have been predicted to see this in the numbers, but, through the lens of the teacher, this was the case. Whether the students liked it or not, they were academically more confident and proficient. One teacher stated, "All prestigious schools around are doing this, and that's because it works whether we can explain it." That comment out of context goes against the national research, as a whole, but the teacher was accurate, with respect to this environment.

For the most part, this small snapshot proves that the "hot topic" and research at the national level are on the right track. Many questions are in line with that research. The teachers saw the good that could be, but desperately wanted more training and professional development. Social ethics issues are there, because the students do not like the single-set classes, but, according to these numbers, the why has got to be answered quickly before it becomes an invalid argument, because even though they did not like it, they did better academically. One other issue that emerged from the open-ended comments section that speaks volumes to whether or not this can be nationally implemented was class size. It was not covered in the research but zoned schools, like this one and others in the trails, cannot insure they have equal numbers of both genders. This makes some classes too big and others too small, and it's a problem that cannot exactly be solved quickly. One teacher wrote, "It's the problem that ended it for us." This same

teacher saw the good that could come from it, but the teacher was admittedly biased because "my girl classes were huge and my boy classes had at least ten fewer in them, so to me the boys seemed much easier, but after returning to co-educational classes this year I realize that two fewer students makes the class seem easier." Again, this is an issue that needs to be inserted into the national research. Every teacher will admit that class size is important.

It is nice to see that, even with this small sample of raw data, we can speak to the debate, and it is evolving and many of the trials are currently ending due to this "zoned number issue." It is something that was simply not thought through or over looked. It should be a fast track to figure out the bumps, however, because it is obvious, nationally and locally, that something stands to be gained educationally from implementing this correctly, and, for teachers, the academics are the number one priority.

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Educators' Perceptions Regarding Students with Autism Spectrum Disorder and Inclusion

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The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149) has approved this research project # 10-050.

Introduction to the Problem

We often hear the word inclusion used in schools today, but just what does inclusion mean and how does it impact children with Autism Spectrum Disorder? Are regular education teachers prepared and equipped properly to instruct students with Autism Spectrum Disorder? What are teachers' perceptions about inclusion of children with Autism Spectrum Disorder? Educators and parents often have misgivings about including students with Autism Spectrum Disorder in regular education classrooms, citing the impact on typically developing children. Does the inclusion of children with Autism Spectrum Disorder benefit typically developing children?

Gargiulo and Kilgo (2000) define inclusion as "more than the physical placement of children with disabilities in educational setting alongside typically developing children. It requires teachers to examine the child in each setting to determine if he/she is actively engaged in all aspects of their environment." (p. 251) The American Psychiatric Association characterizes autism by significant qualitative impairments in social interactions and communications, as well as restricted, repetitive, and stereotypical patterns of behavior, interests, and activities (Kline, O'Connor, Vakil, & Welton, 2008). Kline et al. (2008) note that children with Autism Spectrum Disorder (ASD) are not mandated by IDEA 2004, but there is a large movement of families, professionals, and advocacy groups to include young children with disabilities, such as ASD, in early childhood programs. Placing children with special needs in their least restrictive environment, while utilizing inclusive practices, meet the mandated requirements, and give us the best of both worlds (Kline et al., 2008).

Review of Literature

With the increasing rise in ASD diagnosis in the United States, early intervention is more critical than ever. The Surgeon General reported several years ago that, "intensive sustained special education programs and behavior therapy early in life can increase the ability of the child with autism to acquire language and ability to learn" (Dahle, 2003, p. 65). A delay in a diagnosis of ASD means a delay in the understanding for the child's teacher and the child's parents in what is best for the child. It also means that there will be a delay in services for the child. Early intervention with a child who has an ASD diagnosis often makes the difference in a child's ability to have a functional language system upon entering elementary school (Dahle, 2003).

Dahle (2003) reports that early intervention has been shown to increase IQ score and expressive speech, and reduce behavior problems. It has also been shown to decrease the need for restrictive placements in the future of the ASD student. Dahl also found that it is important to keep in mind that parental involvement in these programs is important, as is the importance of the program in meeting the individual needs of the children.

Dahle (2003) highlights some guidelines of the most effective practices for children with ASD. These include least restive environment, family-centered services, transdisciplinary service delivery, and inclusion of both developmentally and individually appropriate practices. Despite mandates that children with ASD should be placed in the least restrictive educational setting, less than 20 percent are taught in general education classrooms (Dahle, 2003). Children with ASD need opportunities to interact with same-age peers to gain experience socially and with language. In the second guideline, Dahle addresses the need for professionals to make the family an essential part of the decision-making process, with regard to allowing their child to participate in the early intervention process, as much as possible. Understanding that the child is

important to the family, and being receptive to the family and their needs and concerns, is a vital part of making early intervention successful (Dahle, 2003).

In the third guideline, Dahle (3003) mentions one of the best practices, transdisciplinary service delivery, which is a collaborative model that involves several team members sharing roles, which supports a whole-child/whole-family approach. This model allows for the use of a primary interventionist, and promotes skill growth in everyone. The fourth, and final, guideline mentioned by Dahle is inclusion of both developmentally- and individually-effective practice. Services should be individualized to meet the needs of each child so that instruction can best fit the student and their learning style. Individualized services should have respect for the student's uniqueness, preferences, interests, abilities, and health. The curriculum should also be unbiased, with respect to disability, sex, race, religion, and culture/ethnicity (Dahle, 2003).

Kline et al. (2008) found that in inclusion settings, children with special needs are able to work on their functional skills, and language skills are developed, as are social skills and behavioral skills, as children take part in activities with their classmates. They also noted that ASD children tend to have strong visual processing, therefore, visual supports, such as labels (using words and pictures), are important in a classroom. Children with ASD need an environment in which there is a significant amount of routine and predictability. To satisfy this need, educators must plan frequently, and keep the classroom schedule as routine as possible. The teacher can also provide pictorial schedules, social stories, and the like, to help children with ASD understand events, such as field trips, that are not the normal, routine events that are upcoming (Kline et al., 2008).

Within an inclusion setting, Kline et al. (2008) noted that developmentally-appropriate practices (DAP) must be considered, and, taking these guidelines into consideration, the effective

supports in special education would include the monitoring of the child, continued collaboration of the team, parental input, etc. They stated that simply placing a child with ASD into a regular education classroom does not translate into "inclusion" or effective learning for that child, and, in order for inclusion to be successful, all team members must be on-board and the family members must play a vital role. Children of all abilities are placed in a classroom with related service staff or paraprofessionals, special educators, and regular educators, all working in and out of the classroom throughout the day (Kline et al., 2008). Oftentimes, the children in an early childhood setting are unaware of who is considered "special needs" and who is considered "typically developing." Through this set-up, all children receive a variety of informal assistance from all the teachers, whenever it is warranted (Kline et al., 2008).

The National Autism Center Web site notes the following benefits of inclusion:

> The approach has a lot of appeal. It gives children with special needs the opportunity to learn in natural, stimulating environments. Inclusion makes it possible for friendships to occur with non-handicapped peers, provides positive role models, and may lead to greater acceptance in the community. In addition, children without disabilities may benefit by learning about differences between people and by having the opportunity to assist others. Teachers may benefit by achieving a broader appreciation of differences and by learning new techniques for instruction. (Inclusion, 2010, ¶ 4)

The National Autism Center Web site goes on to note that, not all children with ASD can have their needs met in inclusive settings, due to their individual needs and therapies, which can be demanding for a regular education teacher (Inclusion, 2010).

Project DATA (Developmentally Appropriate Treatment for Autism) for Toddlers was a study of children diagnosed with ASD at 1 to 3 years of age. In this study of eight children in an

inclusive, early intervention program for children with ASD (Boulware, Mcbride, Sandall, & Schwartz, 2006), it was found that, in areas of cognition, communication, self-regulation, functional skills, and elementary school placement, all children made gains. Six of the eight children were found by Boulware et al. to have made impressive gains.

The foundation for Project DATA, noted Boulware et al. (2006), was a "high-quality, inclusive early childhood program for all children with disabilities ages birth to 3 years" (p. 95). They noted that the project included five basic guidelines for services of the program:

- The services must take place in an inclusive environment that has activities, materials, and routines that are used in typical toddler playgroups.
- The services are centered on the enrolled families.
- The practices are directed through transdisciplinary teaming.
- The interventions are both practical and value driven.
- The programs include developmentally appropriate practices.

Boulware et al. (2006) found that Project DATA's development of a program that included developmentally-appropriate practices for young children, coupled with applied behavior analysis, along with early intervention and early childhood special education, was both effective for the children and acceptable for the parents. They note that the gains made by the children during Project DATA were maintained over time, and through the children's first- and second-grade school years.

Goodman and Williams (2007) found that there are many field-tested methods of utilizing intervention strategies with children with ASD who are in inclusion classrooms. One such strategy that they noted was auditory engagement. This strategy assisted ASD students to listen and follow directions, during large-group activities. They found that this strategy works to

signal auditory focus cues to gain the entire group's focus before instruction was given, and it also uses songs and music to assist in the transition of activities, as well as during listening activities.

Visual engagement is another strategy that Goodman and Williams (2007) found to be effective in assisting children with ASD. They found that teachers could assist students by increasing their independence through the use of visual schedules, incorporating models for play, and by using hands-on support materials to help ADS students follow information presented by the teacher. They also found that additional visual engagement strategies that were effective for students included ASD students following the information presented by the teacher on the bulletin boards, ASD students following stories in their own book that are read aloud by the teacher, and the teacher identifying salient information.

Social engagement strategy was found by Goodman and Williams (2007) to include requiring responses from ASD students by simply asking questions during instruction time, encouraging choice-making during free play, and assisting with peer interaction. Physical engagement is yet another strategy that can be useful for children with ASD. By providing an ASD student with an appropriate object to hold, including opportunities to move about in instruction, and incorporating observation opportunities and imitation activities, these students will be physically engaged (Goodman & Williams, 2007).

Goodman and Williams (2007) note that it is important to remember that all of these strategies can be implemented for all students, and are useful for their engagement. They add that, to be successful with typically-developing children or ASD children, it is important to notice that these strategies must be taught to all students through direct instruction, and that skill levels vary with all students, and this is true with ASD students, as well. They remind us that the

time frame needed for a particular student to demonstrate independence with a strategy will vary, but, generally, these should be implemented and monitored for a 4- to 6-week period to measure effectiveness. Although these strategies are presented separately, they are more effective, oftentimes, when implemented comprehensively (Goodman & Williams, 2007).

Marks (2007) notes that there is an alarming trend in many schools toward specialized autism programs or appropriate programs for children with ASD, and this trend toward "state-of-the art" programs claims to show promise, but is not based on research. Marks (2007) notes that most of the principles that are utilized in the programs touted are based on applied behavior analysis, naturalistic teaching, and structured teaching. Marks' (2007) concern extends to teacher training, in which teachers may be inadequately trained to provide effective instruction. Marks (2007) cautions against a rush to get on-board with these new programs, noting that, oftentimes, parents are being made to feel as if they must choose between a program that has worked for their child in addressing academic needs or an inclusive program that that meets the socialization needs of their child. "We need to let parents know that they do not have to make this type of forced choice because effective inclusive programs should address both academic and social needs" (Marks, 2007, p. 266). The important thing to consider is what program is the best fit for the child.

Listed below there are five recommended practices for school-aged children to which Marks (2007) makes reference, and they are taken from the National Research Council's Recommendations for Effective Treatment (NRC, 2001, p. 220-221). Marks (2007) notes that, in the list, none of the practices would exclude an inclusion program, but they do require knowledgeable professionals for program implementation. Marks (2007) encourages the education of teachers, parents, caregivers, the public, policymakers, and schools, on the best way

to make to ensure children with ASD are ensured quality educational programs in inclusive environments.

4-1. Based on a set of individualized, specialized objectives and plans that are systematically implemented, educational services should begin as soon as a child is suspected of having an autistic spectrum disorder.

4-2. A child must receive sufficient individualized attention on a daily basis so that individual objectives can be effectively implemented; individualized attention should include individual therapies, developmentally appropriate small group instruction, and direct one-to-one contact with teaching staff.

4-3. Assessment of a child's progress in meeting objectives should be used on an ongoing basis to further refine the IEP.

4-4. To the extent that it leads to the specified educational goals, children should receive specialized instruction in settings in which ongoing interactions occur with typically developing children.

4-5. Six kinds of interventions should have priority:

(a) Functional, spontaneous communication should be the primary focus of early education.

(b) Social instruction should be delivered throughout the day in various settings, using specific activities and interventions planned to meet age-appropriate, individualized social goals.

(c) The teaching of play skills should focus on play with peers, with additional instruction in appropriate use of toys and other materials.

(d) Other instruction aimed at goals for cognitive development should also be carried out in the context in which the skills are expected to be used, with generalization and maintenance in natural contexts as important as the acquisition of new skills.

(e) Intervention strategies that address problem behaviors should incorporate information about the contexts in which the behaviors occur; positive, proactive approaches; and the range of techniques that have empirical support.

(f) Functional academic skills should be taught when appropriate to the skills and needs of a child.

Data Collection and Results

Data Collection

In order to assess educators' perceptions regarding students with ASD and inclusion at an elementary school in Cleveland, TN, a survey was sent to all faculty and staff. The sample population was a voluntary group within the school, which contains grades pre-k to 5, as well as a special education classroom. Regular education and special education teachers, support staff, related arts teachers, etc. were selected, in order to see what similarities or contrasts exist between these groups of educators, regarding the inclusion of children with ASD. The participants were asked to complete an anonymous survey (see Appendix A). Demographic information was collected, but did not compromise the anonymity of any participant. Participants were asked to complete the survey within 1 week, and to place the survey in a sealed, unmarked envelope that was provided. They were instructed to leave this envelope in a large folder provided in the school office. The envelopes were collected on a daily basis. Thirty-five survey forms were sent, and 16 were returned.

The survey form contained three sections. The first section asked the participant about their education and number of years in their current position. The second section asked participants to rate eight statements on a scale of 1 to 5 with 1 being strongly disagree, 2 being somewhat disagree, 3 being neither agree nor disagree, 4 being somewhat agree, and 5 being strongly agree. These statements assessed the educators' comfort level with ASD students, comfort level with special education students, and their perceptions of inclusion and children with ASD. The third section asked educators two, open-ended questions. The first question was, "The most intimidating aspect of including a student with Autism Spectrum Disorder in my classroom is___." The second question was, "Resources needed to assist the inclusion of students with Autism Spectrum Disorder are___."

The educational level of the respondents was impressive. Of the 16 surveys returned, two respondents held Educational Specialty degrees, six respondents held Master's degrees, and eight respondents held Bachelor's degrees. Included were paraprofessionals, support staff in special education, an administrator, and 11 regular education teachers.

The participants' responses (mean and mode) to the eight statements that asked about their comfort level instructing special education students and students with ASD, and the benefits of inclusion to ASD students and typically developing students, are displayed in Figure 1.

As the respondents' levels of education are compared with the answers to the individual statements, there does appear to be a correlation between the respondents' educational level and their comfort level instructing special education students and ASD students in their classrooms: Higher level of education appears to be correlated with greater comfort level in instructing special education and ASD students.

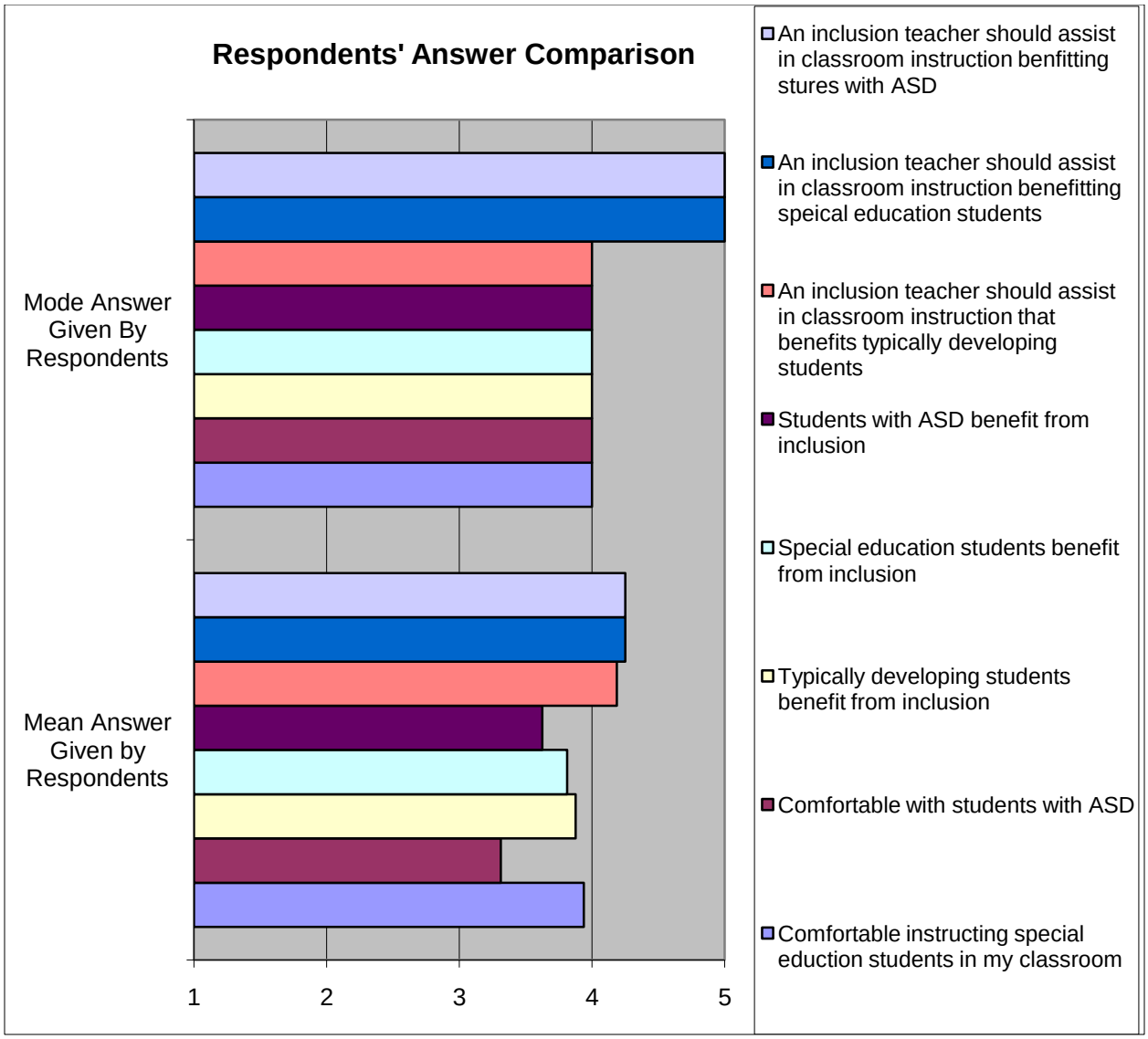

Figure 1. Respondents' answer comparison (mean and mode).

The most interesting information was from the comments received on the third section of the survey. Although the mean respondent score for the question, "I feel comfortable with students with ASD," was 3.3125 out of 5, suggesting that the overall responds neither agreed nor disagreed with this statement, the mode was 4. Several respondents commented, in the third section of the survey, that they felt unprepared to instruct ASD students, and that more staff development in this area was needed. The question, "Students with ASD benefit from inclusion," received a mean score of 3.625 out of 5, and a mode of 4, but, again, many

respondents commented, in the third section, that they felt unprepared to deal with ASD students, alone, in the classroom, with out the support of an assistant or an inclusion teacher.

The overwhelming response from teachers to the question, "The most intimidating aspect of including a student with Autism Spectrum Disorder in my classroom is…" focused on the uncertainty of dealing with an ASD student's behavior, and the impact of the classroom interruptions on the typically-developing children. When 10 of 16 respondents commented on this question, they made reference to classroom interruptions, student distractions, managing uncertainty, unpredictably behavior, unfairness to other classmates, and meeting the needs of the typically-developing classmates, while meeting the needs of the students with ASD. These same respondents also scored 4 or a 5 (indicating that they somewhat or strongly agree) on the three questions in the second section that asked if an inclusion teacher should assist in classroom instruction that benefits typically-developing students, special needs students, and students with ASD.

The educators that participated in this survey were willing to instruct students with ASD, but they responded that they would like more staff development in methods and strategies for students with ASD. To the final question, "Resources needed to assist the inclusion of students with ASD are..." four respondents commented that they wanted staff development classes focused on students with ASD, and strategies to manage their specific behaviors, and more information from doctors, and accredited organizations and researchers. Eight of the respondents asked for more staff, assistants, and/or inclusion staff, to assist with behavior management, ASD information, instructional strategies, and counseling. Several teachers noted concerns about meeting the needs of all the children in the classroom. One respondent wrote, "We need educated, qualified, assistants who can meet the needs of the children with special needs. One

teacher is generally not able to teach, maintain discipline, and meet the needs of children who have behavioral or social disabilities." This is what Kline et al. (2008) spoke of when they stated that simply placing a child with ASD into a regular education classroom does not translate into "inclusion" or effective learning for that child, and, in order for inclusion to be successful, all team members must be on-board and the family members must play a vital role. Children of all abilities are placed in a classroom, with related service staff or paraprofessionals, special educators and regular educators, all working in and out of the classroom throughout the day.

Conclusions and Recommendations

The data collected show that teachers are willing to instruct students with ASD, but they want, and need, additional support, resources, and strategies, in order to make inclusion with ASD students successful. This can be achieved through staff development, staff training, additional staff support, and other research-based methods and strategies. The research is clear that inclusion of ASD students in regular education classrooms is beneficial to an ASD student's social skill development, as well as language development (Dahle, 2003). Kline et al. (2008) points out that a child with ASD can benefit by developing their functional skills, language skills, social skills, and behavioral skills, in an inclusive setting.

Inclusion has many benefits for children with ASD. There are also many strategies that can be utilized by a regular education teacher to assist with classroom management, and the behaviors of children with ASD. The benefits of inclusion extend to typically-developing students, as well as students diagnosed with ASD. Children are individuals, and children with ASD have very unique needs, talents, and gifts, as do typically-developing children. As educators, we must keep that in mind, as we consider placement for children with ASD. We must consider each child's individual needs, the therapies needed for the child, and the very

important family component, when determining a child's least restrictive environment. The special educator and the general educator must work together, in order to meet the unique and individual needs of each child, making inclusion a priority.

The needs of the educator must also be taken into account when placing children with ASD. If an educator is unprepared to instruct a child with ASD and is uneducated about ASD, then he or she will be of no benefit to a child with ASD. Educators are more than willing to assist in the education of children of all abilities, as seen from the data collection, but many feel unprepared to do so due to a lack of education, staff development, and resources. If inclusion is to work, and benefit all children involved, regular education teachers must be educated in the areas of behavior management for ASD students, They must have the support of assistants, support staff, and inclusion teachers. Family members of ASD students are also encouraged to be an important part in the educational collaboration process.

Siskin Children's Institute offers seminars, from time to time, on ASD and educational strategies for students with ASD. The drawback is that, oftentimes, these educational seminars are offered on Saturdays or during the evenings, when educators who have families are unable to attend. Unfortunately, these seminars is that they are rarely advertised to educators in the Cleveland area or to general educators. Staff development takes place for the Cleveland City School System several times per year. The topic of students with ASD, and strategies to manage their behavior, would be an excellent topic to be offered for general educators and paraprofessionals, alike. From the feedback collected, this topic of staff development would be well-received and well-attended.

The National Autism Center (Inclusion, 2010) reminds us that children with ASD can be demanding for a regular education teacher, due to their therapies and individual needs. We have

seen that simply placing a child with ASD in a regular education classroom is not inclusion, in spite of our educators doing their best with the resources that they have on hand. Inclusion can benefit all children involved: typically-developing students, special needs students, and students with ASD. It is important to equip our educators, our schools, and our school systems, with the educational resources necessary for inclusion to work for all children.

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Appendix A
Teacher Survey

Please complete this survey within 1 week of receiving it. Please place the survey in a sealed, unmarked envelope, and leave it in the folder school office. It will be collected by the researcher.

1. I am employed as a(n)
   a) regular education teacher
   b) special education teacher
   c) paraprofessional
   d) related arts teacher
   e) support staff
   f) administrator

2. Number of years working in your chosen position_____

3. Highest level of education attained_____

4. I have experience with children or adults with special needs.
   a. Yes No
5. I have experience with children or adults with Autism Spectrum Disorder.
   a. Yes No

Please answer the following questions on a scale of 1-5:

- 1 being strongly disagree
- 2 being somewhat disagree
- 3 being neither agree or disagree
- 4 being somewhat agree
- 5 being strongly agree

6. I am comfortable instructing special education students in my classroom.
   1 2 3 4 5
7. I am comfortable with students with Autism Spectrum Disorder.
   1 2 3 4 5
8. Typically developing students benefit from inclusion.
   1 2 3 4 5

9. Special education students benefit from inclusion.

1 2 3 4 5

10. Students with Autism Spectrum Disorder benefit from inclusion.

1 2 3 4 5

11. An inclusion teacher should assist in classroom instruction that benefits typically developing students.

1 2 3 4 5

12. An inclusion teacher should assist in classroom instruction benefitting special education students.

1 2 3 4 5

13. An inclusion teacher should assist in classroom instruction benefitting students with Autism Spectrum Disorder.

1 2 3 4 5

14. The most intimidating aspect of including a student with Autism Spectrum Disorder in my classroom is _____
_____
_____
_____
_____
_____.

15. Resources needed to assist the inclusion of students with Autism Spectrum Disorder are
_____
_____
_____
_____
_____
_____.

The Effect of Implementing Daily Assessments on Increasing Student Preparedness in a Middle School Physical Science Class

Amber L. Smith

Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149)

has approved this research project # 10-023.

Introduction to the Problem

During a student teaching placement at a suburban middle school, I immediately noticed that student preparedness for class was a serious issue for eighth-grade physical science. Several of the students would enter the classroom and spend the first few moments of class asking the teacher if they could borrow a pencil, piece of paper, or book, or go to their lockers. This would be followed by a line of students needing to sharpen their pencils or go to the restroom, further delaying the beginning of instruction. Because of these distractions, it was difficult to get class moving in a timely manner, due to the students' lacking to be prepared for class. With only 50 minutes per class period, this problem was also magnified by the vast amount of time it took just to get the students settled, refocused, and ready to begin class, after these initial disruptions. I observed this pattern of behavior recurring in each class throughout the day, and felt that my research should, in some way, address the issue.

Academic performance data among the students in the eighth grade physical science classes indicated that the students were performing poorly on daily work and tests. In order to address this issue, along with student preparedness, my research was proposed to compare the effectiveness of implementing a 5-minute assessment at the beginning of class to increase student preparedness and content comprehension.

Review of Literature

There are a myriad of reasons why students fail to achieve in science, including lack of interest, failure to complete homework, lack of study skills, truancy, lack of real-world connections, and teacher quality. This can be an extremely frustrating situation for students who are continually unsuccessful and for the teachers who persistently attempt to motivate these students. It is important that teachers not give up, and use the opportunity to try new techniques

for sparking the students' interest and engaging them in learning about science (Abdullah, 2003). Making connections with what they learn in science to what they can learn about the real world is a great way to captivate students' curiosity. According to Trefil (2008), "we need to start bringing the system [general science education] more into line with the way science is done today and the way our students will encounter it in their lives" (p. 11).

Even highly effective classroom management can fail during times when students are transitioning, from one class to another, between activities, or at the end of a class. "Bell-ringer" activities take advantage of these times. Instructors frequently run into the problem of gaining all of their students' attention at the beginning of each class, and the situation can make it challenging for them to meet their instructional goals in an already limited amount of class time. A bell-ringer, also sometimes called a 5-minute assessment, is a type of formative assessment characterized by activity that students begin working on as soon as they come into the classroom, prompting them to reflect or review previously studied content. These assessments usually take the form of some question or activity written on the board. The bell-ringer serves as an opportunity to hook the students into the class and, focus them and settle them into the regular class routine (Brahmer & Harmatys, 2009). The teachers have the chance to get organized, take attendance, fulfill any other necessary responsibilities, and proceed with the instruction of the day.

West, Gilbertson, Latourelle, LaVarnway, and Bookman (2004) describe a bell-ringer activity as the following:

> Before students arrive for a class, the teacher posts a question, a prompt, or some key word(s) from a previously presented topic. As the teacher does 'housekeeping chores' such as attendance, students are required to react to the question, prompt or key word(s).

> Students use cooperative pair techniques with a three to five minute time limit to brainstorm, explain, answer or in some way provide feedback to the requirement. This allows students to actively review and be prepared for accountability in subsequent discussion (¶ 1).

Depending on teacher preference, various formats can be used for the assessments. Some teachers favor using small sheets of paper that can be collected daily. Others prefer to use notebook paper, have the students keep the assessments from each day on one sheet, and collect the sheet weekly. Another method is to have the students record their responses to the bell-ringers in a daily journal. No matter the method, giving the students an activity to complete as they enter the room can minimize distractions and disruptive behavior, and allow a smooth transition for class and learning to begin. Research shows that students will come to class more prepared if they know they will be engaged immediately. Some schools have placed a requirement that all teachers have a bell-ringer activity for the beginning of each class as a technique to discourage tardiness (Hardy, 2010). Some teachers give grades for bell-ringers, while others include the assessments according to a class participation rubric. Some accumulate them until the end of a unit or chapter and then return them for the students use for test review.

For teachers, there are several benefits of giving students a bell-ringer activity. They can be an easy way for the teacher to see if the students understand the concepts being presented in each lesson (Vondracek, 2009). If there is an obvious trend that there is a great deal of confusion with specific material, the teacher can make adjustments to the curriculum, or review, accordingly. This is especially useful when teaching scientific concepts that build upon themselves. Requiring participation in these activities can be a good technique for teachers to instill beneficial and essential study skills in their students, as well as encourage them to be

prepared for class. The activities can also be an effective tool that allows the teacher to gauge prior knowledge level before beginning a new unit. If these assessments show evidence that the students are familiar with certain topics, the teacher can minimize expenditure of valuable time covering material with which the students are comfortable, and focus on new topics they need to learn.

Formative assessment can provide students with individualized responses and advice about what they can do to enhance their academic performance. It can help the teacher and the student to identify areas of weakness or specific concepts that may need further clarification. Formative assessments, like bell-ringers, should serve to identify any area in which the students lack comprehension, give a clear indication of the criteria used to assess performance, determine successful progress, provide practical feedback, and include instructional strategies that will direct the student toward successful accomplishment of learning objectives (Brookhart, 2007; Guskey, 2010).

One significant point often gets lost in the education talk, which is that many middle grades students come to school motivated not by interest in learning but by a need for society (Stevenson, 1992). The transitions from class to class allow for important socialization time for the students. The excitement of this social stimulation is one reason why it is so difficult for students to adjust their focus back on learning, once they arrive in each class. Teachers can use this to their advantage by allowing the students to work quietly in small groups, which may satisfy to their need for social interaction.

Teachers can assist students in becoming more organized and help to build study skills by establishing routines for their students. One way to put that into practice is by implementing daily assessments (Fortin, 2008). A bell-ringer, or similar type of activity, allows a short period

of time for the teacher to complete attendance, return or collect papers, and any other "house-keeping" duties required. It also provides an essential few minutes to get the students attentive, settled, and geared up to learn. Establishing this sort of routine will benefit both the students and the teacher, in numerous ways.

Data Collection and Results

Data Collection

Research question. Will implementing a 5-minute assessment at the beginning of each class encourage the students to come to class more prepared and increase their comprehension of the content?

Subjects. The participants were 38 of the eighth-grade students in four physical science classes. The research took place during the fourth and fifth weeks of a student teaching assignment at a suburban middle school in Hamilton County, TN.

Procedures. The researcher and the teacher involved negotiated the topics of classes used for instruction during the execution of this research, and determined the series of science unit lessons that were to be taught in correlation with the established Tennessee curriculum standards. I explained my intentions to the prospective students, and 38 of 108 students returned the signed parental consent and student assent forms, limiting the data that is presented in the case study.

Instruments.

Pre-test of chemical reactions unit. Before implementing the bell-ringer activities, a 20-item, multiple-choice pre-test over the new content, soon to be introduced, was given to gauge prior knowledge levels of the students.

Five-minute assessments given daily. Each day, during a 2-week unit on chemical reactions, the students from two of four academically equivalent physical science classes were given a 5-minute assessment. The daily assessments consisted of one to two questions written on the board which the students were required to complete during the first 5 minutes of class. Small sheets of paper were placed on each desk before the students arrived, and contained enough space to write in their responses. The students were allowed to talk quietly and confer with a partner during the assessments. They were also allowed to refer to notes or the text if they did not know the answer, while still adhering to the time limit.

The assessments were collected and the students were given a participation grade. This method permitted me to determine the areas in which the students were struggling, as well as gauge their mastery of the content. Due to changes in the schedule because of inclement weather and other time constraints, all 10 intended questions were not used. The students completed a total of seven, 5-minute assessments.

Post-test of chemical reactions unit. As the students reached the end of the unit, they were given a post-test, consisting of the same 20 multiple-choice items used in the pre-test. The expectation was that the students had mastered the content and would be able to demonstrate this by scoring well on the post-test.

Recruitment and selection plan. The classes chosen as the experimental groups and control groups were randomly selected by drawing numbers. The classes were similar in academic performance, up to that point, so my cooperating teacher and I felt this was a reasonable way to choose the two groups for study. Blocks 4 and 5 were selected as the experimental group and blocks 7 and 8 were selected as the control group. Only the data from those students who returned the signed consent forms are used in this research. Participants in

experimental group included 10 students from block 4 and 8 students from block 5, who were given the daily, 5-minute assessments. The participants in the control group included 9 students from block 7 and 11 students from block 8.

The 5-minute assessment questions were selected using the textbook, and were structured to remind the students of the concepts discussed the previous day. They were intended to build upon the lessons previously taught and promote recall of the information.

Instructional plan and leadership. The student teacher and cooperating teacher worked together to determine the material to be covered and the sequence of instruction for the unit. The student teacher was responsible for all of the primary teaching responsibilities, designing and implementing lessons and teaching strategies, along with evaluating students' progress during the course of the research.

Results

The participating students showed a general increase in their scores from pre-test to post-test. Pre-test data indicated very little prior content knowledge among the students. Each of the students in block 4, except for one student, showed an increase in scores from pre-test to post-test.

The participating students from block 5 showed similar results. Though two students scored the same on the pre- and post-test, the rest of the students showed, at least, a small increase in score from pre-test to post-test. Block 4 students had an average pre-test score of 47% and an average post-test score of 60%, while block 5 participants had an average pre-test score of 41% and an average post-test score of 58%. These students comprised the experimental group, which received daily, 5-minute assessments.

The other two classes also showed a general increase from pre-test to post-test. One student from block 7 scored lower on the post-test, while all of the other students scored higher on the post-test than the pre-test. The participating students from block 8 showed comparable outcomes. One student had the same score for both pre-test and post-test, while all of the others showed an increase. There was also a broad increase in average scores from the pre- to post-test. In block 7, the average pre-test score of 44% rose to an average post-test score of 51%. The results for block 8 showed the greatest increase, rising from 46% on the pre-test to 66% on the post-test.

The mean scores for all classes on the pre-test and post-test were 44.5% and 58.5%, respectively. The median scores for the pre-test and post-test were 45% and 58%, respectively. This indicates that there was only slight improvement among all participants from pre-test to post-test. This could be indicative of failure on the part of the student teacher to effectively communicate the lessons.

Throughout the course of the research, I kept a journal, recording observations of student preparedness among those students who were given the 5-minute, daily assessments. The students from block 4 showed no real change in preparedness for class over the 2-week period. I observed several of the students complaining, each day, that they had to complete the 5-minute assessment, and many of them did not even attempt to answer the questions. The students in block 5 showed a slight increase in preparedness, and generally accepted that there would be a 5-minute assessment each day. This class exhibited more willingness to participate in doing the daily assessments than did block 4.

Conclusions and Recommendations

Conclusions

In general, the students showed an increase in scores from pre-test to post-test. Unfortunately, the classes that showed the most improvement still had an average score that was a failing grade. The two classes who received the daily, 5-minute assessments did not show any marked improvement in the area of preparedness or comprehension.

The research was limited by several factors. The study was restricted to a small number of participants because only a small portion of the students turned in the parental consent forms. The data represents 35% of the total number of students in the classes. Such a small portion of the total may not give an accurate representation of the larger group of students, and, therefore, possible effects of the study, in general.

Another factor that may have hindered the results was the existing classroom management policy. The students were resistant to changing their habits of coming to class unprepared.

Another factor that may have hindered the results of this research was time. During the 2-week period during which the research was conducted, there was a half-day snow day and a full snow day. There were also 3 days in which the students' regular schedule was modified, shortening the length of the class periods. On one day, there was TCAP preparation for all eighth-grade students, requiring them to test for 5 hours. A second day was modified to accommodate awards assemblies for all of the students in the school. A third day had to be modified due to a half-day field trip to the National Guard Armory for "Career Crunch," a yearly career fair for eighth graders.

Recommendations

For a variety of reasons, the results of the research study did not show marked improvements in either preparedness for class or in comprehension of the content. For a future

study to measure the effectiveness of implementing daily assessments on student preparedness and comprehension, more time would be ideal. With such a restricted amount of time with which to conduct the study, no real changes could be observed. I do feel that this type of study could be effective, if the students had more time to adjust to the changes in their daily routines.

Another recommendation for future study would be to immediately begin implementing the daily assessments as early as possible in the semester to get the students accustomed, not only to doing the assessments, but, also, for the students to realize the benefit of their efforts. If they were allowed to use these assessments as a study guide for tests or receive a grade for them, I believe that the students would be more inclined to make a concerted effort.

Another problem I encountered during my research project was a serious lack of motivation among the students in the participating eighth-grade physical science classes. Students were not accustomed to any intrigue or creativity to the lessons presented, and there was little to no visual stimulation in the classroom that would be conducive to science exploration. The students were required to complete similar tasks each day, with very limited variety in the instruction methods. The students were not trusted with any hands-on learning or lab activities, and I feel this only further extended their overall lack of motivation to learn science. For future study, I would recommend implementing various learning strategies that could accommodate a more diverse group of student learning styles and interests in order to enhance the levels of motivation among participants. This may, in turn, affect the level of preparedness exhibited by the students. Considering the assessments as another obligation with no positive consequence made the students unable to comprehend or realize any of the possible benefits from their efforts. Perhaps some professional development seminars that would address

investing time and energy into finding new and exciting ways to motivate students would encourage teachers to work harder at engaging the students in science learning.

I would also recommend that teachers work to acquire grants that could allow for integrating some technology into the classroom. Fortunate schools and students that have the technology of Promethean boards available can use individual remotes to answer questions posted on the board. This could be an easy way to spark the students' interest and get them involved in doing bell-ringers in an interactive and engaging way, along with keeping the teacher from having to grade a lot of papers. Once all student names were entered into the database, the students' responses could be scored and recorded using the software tool component. By means of this method, the teacher could assemble the daily assessment questions into a flipchart that could later be accessed and/or printed for review for tests.

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With Which Method Does a Student Best Comprehend an Audio Book?

Michelle Timmons

Education 590, Spring 2010

The University of Tennessee at Chattanooga

The Institutional Review Board of The University of Tennessee at Chattanooga (FWA004149)

has approved this research project # 10-066.

Introduction and Background to the Problem

From my experience in the classroom, I have discovered that children love to listen to, and read, books on audio. This was a bit of a shock to me, but I thought this would be a great tool to incorporate into the classroom. Thinking back to my schools years, I only remember reading books independently, in a small group, or as a whole class, but never on audio. Seeing how much students enjoy listening to books on audio, I have to question if having the book for the child to look at will assist with comprehension. Or, will listening to the book and letting the child use their imagination along with the sounds of the audio, foster comprehension? Having the book in front of the child will help the students see the pictures that the author wants them to see. This gives very little room for imagination, but, of course children learn in different ways, so one would think that the results would be the same between letting the students have the book while listening to the audio, and having the audio only and letting the imagination run its course. I have found that many teachers are still not using books on audio, but they do seem to becoming more popular.

Area of Focus

With which method does a student best comprehend book on audio? The results of this research will help teachers know how to use books on audio in their classroom. Do students need to look at the book, even though the book is being read to them on tape, or do they comprehend just as much by using their imagination while the book is being read to them? If it is found that students comprehend more while looking at the book, then teachers will know that they need to supply enough books to allow each student to look at the book while the audio is being played. If the results show that the students comprehend more using their imagination, then teachers will know that the students don't really need a book to look at while listening to the

audio. If the results show the same between results for the cases with a book and no book, then teachers will know that the books could be optional because the students will comprehend the same amount, regardless of the presence of a book. This research could be very beneficial to teachers who use books on audio in their classrooms, or those that are maybe, thinking of using books on audio.

Research Questions

The purpose of this research is to see which method is best for student comprehension of books on audio. This research will be done through having two groups of five students listening to the same book. One group will listen to the book on audio and will be able to look at the book while the tape is playing. The other group will listen to the book on audio, and will be unable to look at the book. The questions I want to answer during this research are the following:

1. Which method is best for a student to comprehend from a book on audio?
2. Is having the book in front of the student, giving pictures for the student to see, beneficial to the comprehension of the book?
3. Will the student be able to use their imagination to help them comprehend the book, without seeing the pictures in the book?
4. Does it matter which method is used? Will the students comprehend the same amount regardless of the method used?

Based on what I have read, I feel that there will be the same correlation between the two methods and both will show the same comprehension of the books on audio.

Assumptions

I feel this research is going to show that students comprehend about the same amount, regardless of whether the students have a book or let their imagination lead the way. This is due

to the fact that all students learn and comprehend in different ways, based on their learning styles. This research is being conducted on random students from one kindergarten class. I feel that I will have a good sample with different learning styles in both groups to show this correlation. In my experience, I have seen many students comprehend books on audio by just listening to them, as well as those who listen and look at the book. I feel this research will show the same results with both methods. The difference will be based on the learning styles of the students that I randomly pull from the one kindergarten class.

Limitations

This research does have some limitations. The study is being conducted with only one class, and one group for each method. The research will be completely random, and may not fully represent all learning styles, which would possibly show a different result. To have fewer limitations, that research would need to be conducted over a longer period of time, and allow for many different groups and ages to participate. By doing more in-depth research, the results would, possibly, show all learning styles, rather than those from the 10 student participants.

Review of Literature

During my research of books on audio, I looked at many reports of research and articles about the topic. Lee (2010) stated that, "Most children find it a great deal of fun listening to a lesson on audio, rather than having to read it. That is why children spend a lot of time watching movies, rather than reading" (¶ 6).

Ethel (2008) stated that books on audio are showing increasing success for starting and struggling readers. This article also talks about how easy it is to download books on audio, and that these can now be placed on an MP3 player, by which the children can listen to the book.

Finch (2009) wrote an article about the benefits of children using books on audio. One of those benefits is allowing children to use their imagination, if the tape does not come with a book. Another benefit would be helping the children to improve their concentration and listening skills.

Neuman (n.d.) wrote an article for Scholastic about the literacy benefits of listening to books on audio. She stated, "Hearing a book read on tape helps her see how the words on the page can come alive in a fluid, expressive way" (¶ 3). See talks about how the tapes have voices; people read the books in silly voices with dramatic enhancements.

Succarieh (2010) wrote an article about books on audio, and stated that they are very helpful to children who have not yet learned to read. He also stated that it helps expose children to books, if the parents cannot read to the child every day.

Bush (2006) approached books on audio with suspicion. She stated, "I was pleasantly surprised to discover that the experts agree – audio books in fact help improve a child's reading" (¶ 2). She stated that books on audio help bridge the gap for young children whose comprehension is better than their reading skills.

Data Collection and Results

Description of the Intervention

The purpose of this research is to look at the strategy of reading books on audio, and to see if having the book in front of the child helps with their comprehension, or if their imagination will give them the same comprehension as looking at the book. Based on the outcome of this research, I will know if using books on audio in a classroom is sufficient for comprehension, or if the books should be available. Will children comprehend as much without the book, and allow

their imagination to do the work for them? This could be something very beneficial to teachers and parents of young readers.

Description of the Project Membership

This study will include 10 students from one kindergarten classroom located in Hamilton County, TN. The students will be chosen from a random drawing by the teacher. Parents of these students will be asked to sign a consent form to allow their child to participate. If the parent does not grant permission for the student to participate, another student will be selected by random drawing.

Statement of Hypothesis

Based on my experience with children, and the fact that they all have different learning styles, I feel that both methods will show the same amount of comprehension.

Research Design

This research will be conducted through having the 10 students split into two groups of 5 to listen to the same book on audio. The first group (Group A) will listen to the book while looking at the book. The second group (Group B) will listen to the book while looking at no book, and using their imagination to visualize the story. Once the tape is finished, I will ask each student five questions about the book to gain an understanding of their comprehension (see Appendix A). I selected a book with which the group was not familiar, and had the two groups listen to the book at different times. I will read the questions to the students, based on their possible low reading level, and I will write their responses.

Data Collection

Data collection was done after the two groups listened to the book on audio. Each student was asked the same five questions, in the same order. Working with each child.

individually, I read the question and recorded the response, without any of the other children being able to hear another's response.

Data Analysis and Interpretation

Data will be gathered and looked at through a pie graph. I will record the number of questions that each student got correct and incorrect, and then looked at that in comparison to the group in which they participated. This will show any relation between the methods used in listening to the book on audio.

Results

Group A comprehended much more than group B (see Figures 1 and 2). Group A was the group who listened and looked at the book. The results show that, for 25 total questions, 23 were answered correctly and 2 were answered incorrectly. Group B, who just listened to the tape, answered 14 questions correctly and 11 questions incorrectly. Based on the results of this study, when using audio books in my room, I will be sure to have the books for the students to look at while listening to the tape. Although I think using their imagination is great for children to do, maybe having them draw a picture of something that either happened in the book, or something they think will happen next, would be a better way to have them use their imagination. Also, by having them listen and look at the book, it helps them develop reading skills and recognition of sight words.

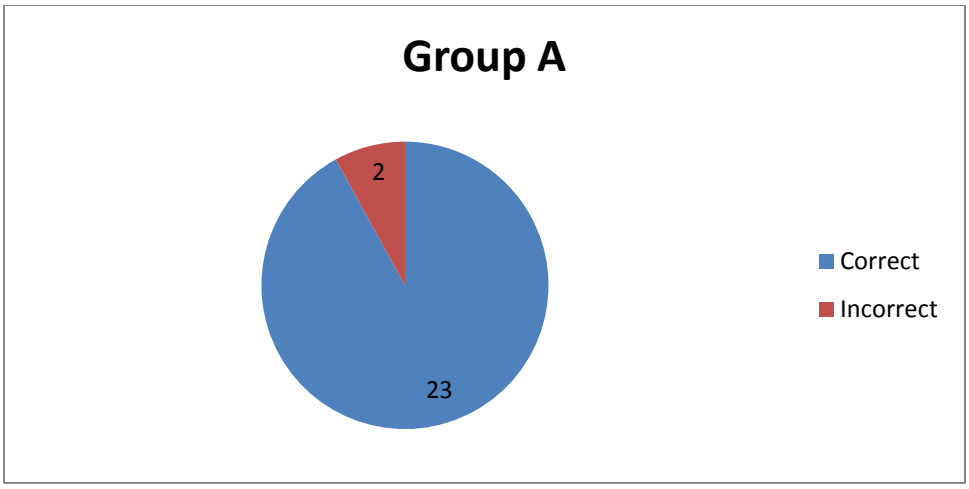

Figure 1. Results from Group A.

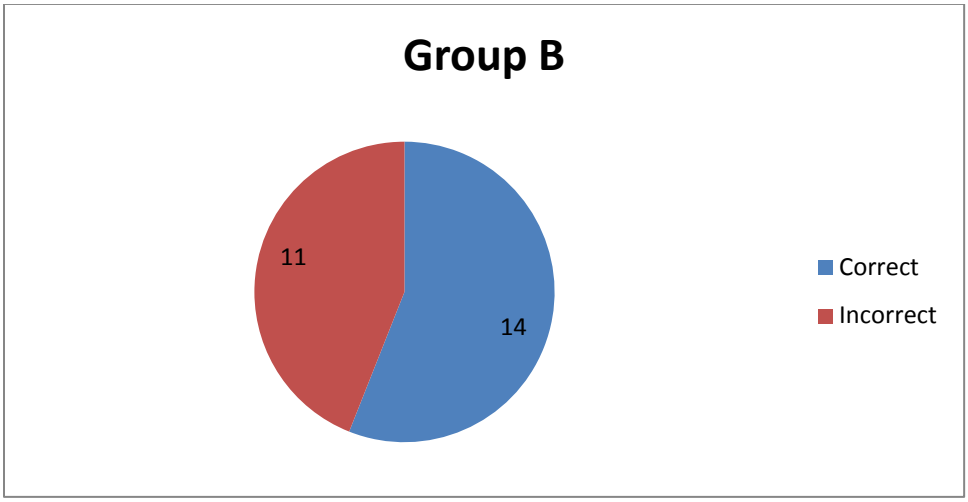

Figure 2. Results from Group B.

Conclusions and Recommendations

I think all teachers of young children should incorporate books on audio into their classrooms. When doing this, they should have the book for the students to look at while listening to the tape. This will insure that all students comprehend the book to the best of their abilities. I was unable to find any information about grant money for this topic area, but I'm sure you could find grant money to supply books on audio to your classroom. Technology is key to

books on audio; without a CD player or computer, you would be unable to provide books on audio to your classroom.

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Appendix A
Dandelion
By: Don Freeman

1) What type of animal is Dandelion? _____

2) What did Dandelion get invited to? _____

3) Who is the hostess of the party? _____

4) What happened to Dandelion when he showed up for the party? _____

5) Did Dandelion get to attend the party? _____