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WILL THE USE OF GRADE TRACKERS IN THE ORCHESTRA CLASSROOM IMPROVE SECTIONAL ATTENDANCE AND OVERALL GRADES?

by

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A capstone submitted to the Faculty of the Graduate School of
Winona State University

In partial fulfillment of the requirement for the degree of

Master of Science

Department of Education

December 2006

This capstone entitled:

Will the Use of Grade Trackers in the Orchestra Classroom Improve Sectional Attendance and Overall Grades?

written by Julianne M. Dahlin

has been approved for the Winona State University Department of Education by

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The final copy of the capstone has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

Acknowledgements

I would like to thank my family and colleagues for their encouragement and support during the writing of this Capstone Paper.

Dahlin, Julianne M. (M.S., Education)

Will the Use of Grade Trackers in the Orchestra Classroom Improve Sectional Attendance and Overall Grades?

Capstone directed by Dr. Thomas Sherman

Abstract

Grade trackers are becoming widely used in schools across America. This study investigated whether they would be valuable in an orchestra classroom. The subjects were middle school aged students, grades six through eight. The seventh and eighth grade students used grade trackers for one semester and traditional grading the other semester. One class of sixth grade students used grade trackers, while the other class did not. Further research with more students is needed to make a strong recommendation. However, based on the findings, grade trackers seemed to make a positive difference in both areas of this particular music setting.

CONTENTS

CHAPTER ONE

INTRODUCTION

The Baldrige Framework in Education has been adopted in the researcher's school district as a model for all staff to follow while teaching. One of the core values and concepts of Baldrige is learning-centered education (Baldrige, 2005). Within this core value and concept is the characteristic of student-led self-assessment to clarify goals and track the progress of grades. Teachers have adopted grade trackers as a method of self-assessment.

Need for the Study

Music is not a subject known for concrete grading and self-assessment. Most people refer to music as a performance-based class or elective class. In past years, most students would receive an A or B for showing up and performing in concerts. In addition to performances and participation, the music staff in my district has worked to incorporate theory, music history, and playing and written tests as part of the grading process,

With the adoption of the Baldrige Framework, teachers have been pushed to create ways for students to self-assess and keep track of their grades. As stated before, teachers are using grade trackers to accomplish this. It is important that music teachers develop ways to use Baldrige in their classrooms. Grade trackers are an easy way to begin the process.

Statement of the Problem

It is difficult to know if this form of self-assessment will make a difference because music teachers do not usually use grade trackers. Based on my observations of other teachers' success with grade trackers, it can be assumed that grade trackers will help students keep track of their progress.

In a music classroom, one of the recurring problems is lack of sectional attendance and preparedness for class. Consequently, this brings the grades down. The hope is that using a grade tracker will help sectional attendance and final grades rise to an acceptable level.

Statement of the Hypothesis

Using grade trackers will raise the second semester overall final grade and sectional attendance grade of seventh and eighth grade orchestra students and raise the overall final grade and sectional grade of a sixth grade orchestra class.

Variables

There are many variables in this study. The independent variables are variables that change for the study. The dependent variables are the items that will change because of the independent variables. Control variables are aspects of the study that are controlled by the one in charge of the study. A moderator variable is the piece that is out of the researcher's control.

Independent variables:

The classes chosen for this study are the independent variables. The students in sixth, seventh, and eighth grade were being tracked. There are two orchestra

classes of sixth grade; the A day class was being tracked and the B day class was not. The seventh and eighth grade classes were both using grade trackers.

Dependent variables:

The dependent variables are final grades and sectional attendance. By employing the grade trackers, final grades and sectional attendance should change to some degree from one semester to another.

Control variables:

The items that are under control, the control variables, were the choice of students in each class, instrumentation between classes, amount of sectional time, and the grading policy. The instrumentation was the same in the sixth grade classes: violin, viola, cello, and bass. The number of students did decrease in the seventh and eighth grade classes; the researcher did not use those students' scores in this study. The sectional time required remained at twenty-minute sessions, four times a quarter. In addition, the grading policy remained the same from first semester to second semester.

Moderator variables:

The students come from various cultural and socio-economic backgrounds, a large moderator variable in this study. This increased factors such as: parental support, or lack there-of; the students' attitudes, interests, and musical backgrounds; and the musical ability of the students. Other variables were possible differences in the average age of the groups and the day of the week classes were held. In addition, many classes went on field trips during second semester. This meant that students had to make up the sectionals missed, consequently lowering their grade.

Limitations and Delimitations of the Study

Limitations:

- Sample size—Based on 90 students assigned to orchestra classes during the 2004-2005 school years.
    - Age—The study included sixth, seventh, and eighth grade students.
    - Maturity—The students' varied in age from eleven to thirteen years.
    - Socio-economic status—The students were from all levels of income.
    - Diversity—The study included a small middle school within a large school district in Southeastern Minnesota with a widely diversified population.
- Researcher—One female middle school orchestra educator with limited experience in use of grade trackers conducted the study.
- Length of study—The research compared two semesters worth of data. A year's worth of data does not give a true result to determine the worth of grade trackers.
- Grade trackers—The researcher used two grade trackers. The first version confused the students, resulting in a needed change.
- Assessment—Some students did not understand how to compute their grade.

Delimitations:

- Time allotted for sectionals—Due to schedule constraints, only four twenty-minute sectionals were given each quarter. It is possible that more sectionals would have altered the outcome of the study.

CHAPTER II

REVIEW OF LITERATURE

The Baldrige Education Criteria, learning-center education, and self-regulated learning have this concept in common: goal setting and tracking the progress towards the goal will create better learners with greater success. These ways of thinking about education tie into one another very well.

The Baldrige Education Criteria for Performance Excellence are made up of eleven core values and concepts. According to Harry S. Hertz, the director of the Baldrige program, the criteria are “about an organization that is high performing, has high integrity, and is characterized by the ethical behavior of its students, faculty, and staff” (Baldrige National Quality Program [NIST], 2005).

In 1998, the school district implemented the initiative “continuous improvement” based on the Baldrige Education Criteria. From classrooms to school board meetings, one can witness “continuous improvement” in action. This includes using a plus/delta to review a previous meeting, graphs to chart progress towards a goal, and censographs to determine prior knowledge of a subject.

The school district also uses Baldrige to define areas of the Aims, Goals, and Measures. For example, a measure of Efficient and Effective Operations is whether a parent can indicate successfully “my child is in a classroom where he/she uses data to set goals and track performance improvement” (Rochester Public Schools, 2005).

Learning-centered education is a core value of the Baldrige education model. Learning-centered education places the emphasis of education on “learning and the real needs of students” (NIST, 2005). The Baldrige criteria delves deeper into this

concept and highlights active learning and problem-solving skills as strong components to a successful education. These skills prepare students for the workplace of the future. For example, a key characteristic of learning-centered education is using self-assessment tools such as charting progress towards goals and developing a strategy to make the goal. This is an important skill to have in a competitive workplace.

Another view of learning-centered education is self-regulated learning (SRL). B.J. Zimmerman and D.H. Schunk developed this school of thought. In true SRL, students think of learning as something they do to better themselves instead of something forced upon them. Student goal setting, self-monitoring, and self-assessment are all pieces of self-regulated learning. As D.H. Schunk wrote himself, “Having students self monitor their performance and evaluate their capabilities or progress in learning makes it clear that they have become more competent” (2000). According to the American Psychological Association, successful learners are active, goal-directed, self-regulating, and assume personal responsibility for contributing to their own learning (1997).

CHAPTER III

METHODS AND PROCEDURES

Study Overview

The orchestra students at FMS participated in this study, which was conducted during the 2004-2005 school year. All orchestra students were graded traditionally during the first semester. During second semester, the majority of the students used grade trackers. The grade trackers were used to monitor sectional attendance and overall grades.

Research Design

The grade trackers were given to the students at the beginning of second semester, January, 2005. During the semester, the group using the grade trackers calculated their grade percentage and kept track of their sectional attendance. Scores from daily points were recorded on the grade tracker each week. When tests or worksheets were handed back, students would record the score on the grade tracker and find the grade percentage thus far.

The seventh and eighth grade classes were both given grade trackers. The sectional attendance and final grades from first semester were compared to those from second semester.

The sixth grade classes were divided into like instrument groups during first semester. At second semester, the students were randomly placed in two classes with violins, violas, cellos, and basses in them. The class on A days was graded traditionally; the B day was given grade trackers. The second semester sectional attendance and finals grades were compared against each other.

Selection of Subjects

The students who were in orchestra during the 2004-2005 school year, participated in this study. This was not a voluntary participation. One class of twenty-two sixth graders used grade trackers; the other class of twenty-four sixth graders did not. The latter class used a traditional grading system. The seventh grade class consisted of seventeen students; the eighth grade class had twenty-six students. Both of those classes used grade trackers. Any students who dropped orchestra in the year were not included in the study.

Instruments/Measuring Devices

The grading system between the two semesters did not change.

- Daily points – 5 points per day
- Sectionals – 18 points per sectional
- Concerts – 36 points per concert
- Practice Logs – 5 points per week
- Playing Tests – 25 points each

Daily points were added to the grade tracker at the end of each week. Sectional points were given at the sectional; forgetting instruments or making up sectionals meant a loss of points. After the practice logs and playing tests were graded, they were given to the students to add the points to the grade trackers. Each week, points were added up and the grades would be tallied. This insured that students knew how they were doing each week. An example of the grade tracker can be found the Appendix A.

Reliability Measures

The researcher maintained reliability in different ways. First, more than one class was given the grade trackers. This created a larger number of subjects, which ensures the results are more reliable. The study was conducted over the entire school year, divided into two semesters. The length of time allowed for a greater degreeof accuracy in the grades and attendance of each student. This indicates that the results are reliable.

Validity Measures

The validity of this study is confirmed by t-test results, calculations, and ease of transfer to another class. This study could easily be done by another teacher or with another subject matter. Any class could use grade trackers and analyze the results. The calculations show an increase in both sectional attendance grades and final grades for all classes. These results, as well as t-test results, are further discussed in Chapter Four.

Field Procedures

The tracking students were responsible for filling out the grade tracker at the end of each class, at each sectional, and when a worksheet or playing test grade was handed out. They also figured their score at the end of each week, quarter, and semester.

The teacher recorded the grades for each class, grade tracking and non-grade tracking. The students who did not use grade trackers received a mid-quarter and end-of-quarter progress report, which a parent or guardian signed. The grade-tracking group used the grade trackers as progress reports for mid-quarter and end-of-quarter.

A survey was given to the grade-tracking group at the end of the semester. The survey included four questions inquiring about the students' opinions on the grade trackers. The questions and results are explained in further detail in Chapter IV.

CHAPTER IV

RESULTS AND DISCUSSION

As stated earlier, the hypothesis is that Using grade trackers will raise the second semester overall final grade and sectional attendance grade of seventh and eighth grade orchestra students and raise the overall final grade and sectional grade of a sixth grade orchestra class. The results are interesting and make for good discussion.

Sectional Attendance

Overview:

Each member of orchestra received small group sectionals during this study. Sectionals were twenty minutes long, four per quarter. Attendance was mandatory. If a student missed sectionals for any reason, that sectional needed to be made up during a different sectional time for a slightly lower grade.

At each grade level, the results of this study showed an improvement in sectional attendance when the students used the grade trackers. Even though the survey results did not indicate that the students believed grade trackers were the reason for the improvement, the probability is high that the trackers made a difference.

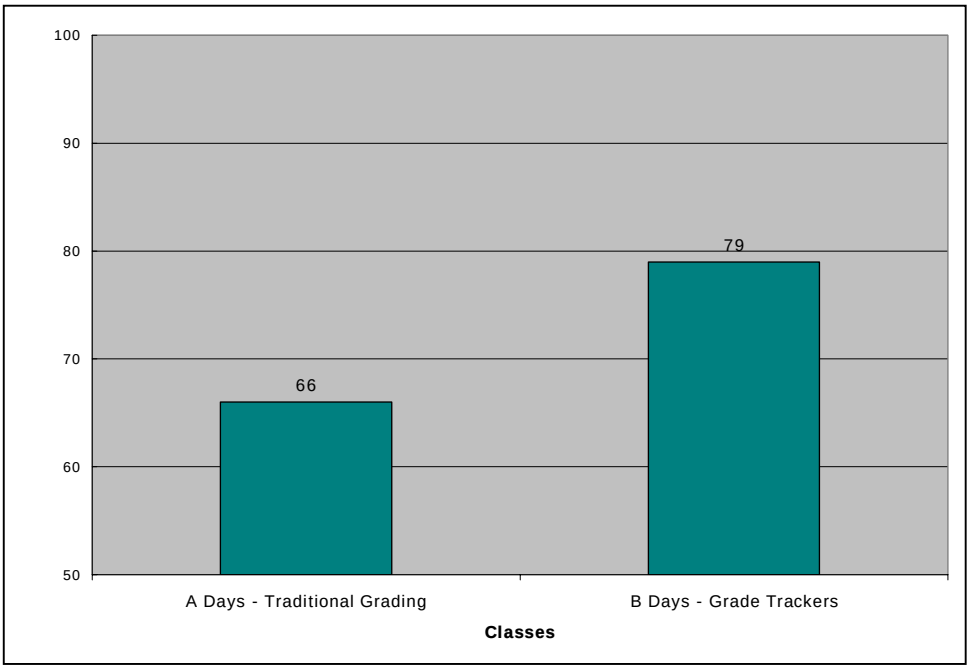
Sixth Grade – A/B Days Comparison:

The sixth grade orchestra was divided into two classes, A day and B day. During first semester the students were divided into like instrument classes, i.e.violin class, viola/cello/bass class. Neither class used grade trackers during first semester. At semester time, the students were in a more traditional orchestra setting with all four

instruments in each class. The A day students were not tracked (traditional group); the B day (tracked group) students used grade trackers.

Statistical Analysis. For the sectional attendance grades, as predicted, the B day class using grade trackers (M = 79.0, SD = 30.0) received a higher average grade than the A day class, which did not use grade trackers (M = 65.9, SD =35.8), $t(22) = -1.34$, $p = 0.189$ (one-tailed). The results are not highly statistically significant, yet the grades did show improvement in the B day class, as illustrated in Figure 4.1. The difference in grades was 18 percentage points.

Figure 4.1 **Comparisons between Sixth Grade A/B Day Sectional Attendance**

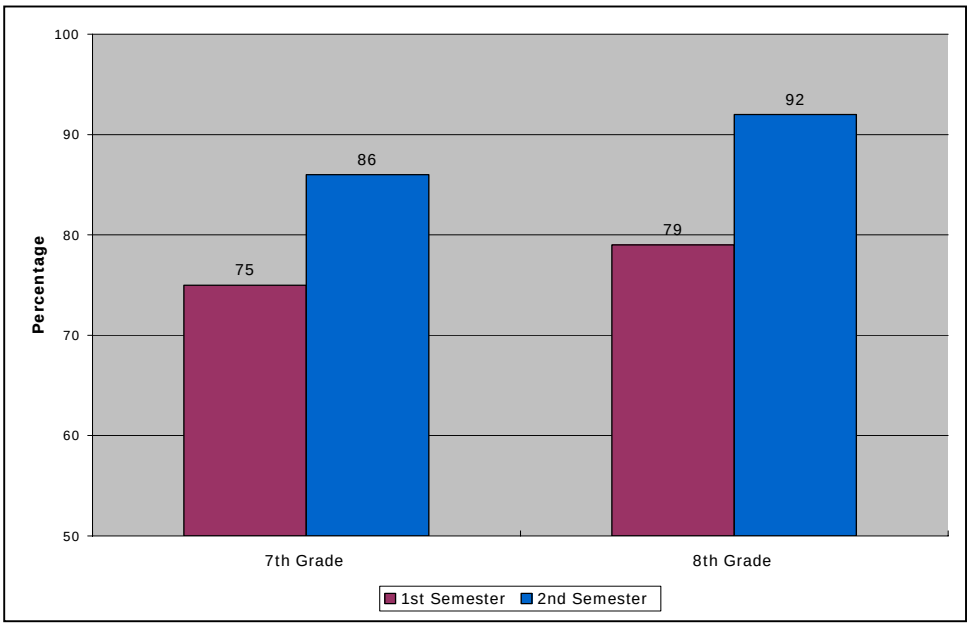


Seventh and Eighth Grade – Semester Comparison:

The seventh and eighth grade classes were set up the same way. Each class had all four stringed instruments: violin, viola, cello, and bass. Neither class used grade trackers during first semester. At semester time, the students were given grade trackers.

Statistical Analysis. In the seventh grade class, the grade trackers were used during second semester. The sectional attendance grades during this time (M = 85.7, SD = 17.4) was significantly higher than those of the first semester (M = 75.2, SD = 32.9), $t(17) = -1.17$, $p = 0.252$ (one-tailed). The results are not highly statistically significant, yet the grades did show improvement in the second semester, as illustrated in Figure 4.2. In the eighth grade class, the grade trackers were also used during second semester. The sectional attendance grades during this time (M = 92.3, SD = 14.0) was significantly higher than those of the first semester (M = 78.7, SD = 21.6), $t(24) = -2.59$, $p = 0.013$ (one-tailed). The results are statistically significant, and the grades supported this improvement, as illustrated in Figure 4.2.

Figure 4.2 **Comparisons between First/Second Semester Sectional Attendance**



Final Grades

Overview:

Each member of orchestra received final grades based on the following criteria:

- Daily Points - 5 points per day
- Sectionals - 18 points per sectional
- Concerts - 36 points per concert
- Practice Logs - 5 points per week
- Playing Tests - 25 points per test

At each grade level, the results of this study showed an improvement in overall grades when the students used the grade trackers. Even though the students did not indicate that the grade trackers were the reason for the improvement, the probability is high that the trackers made a difference.

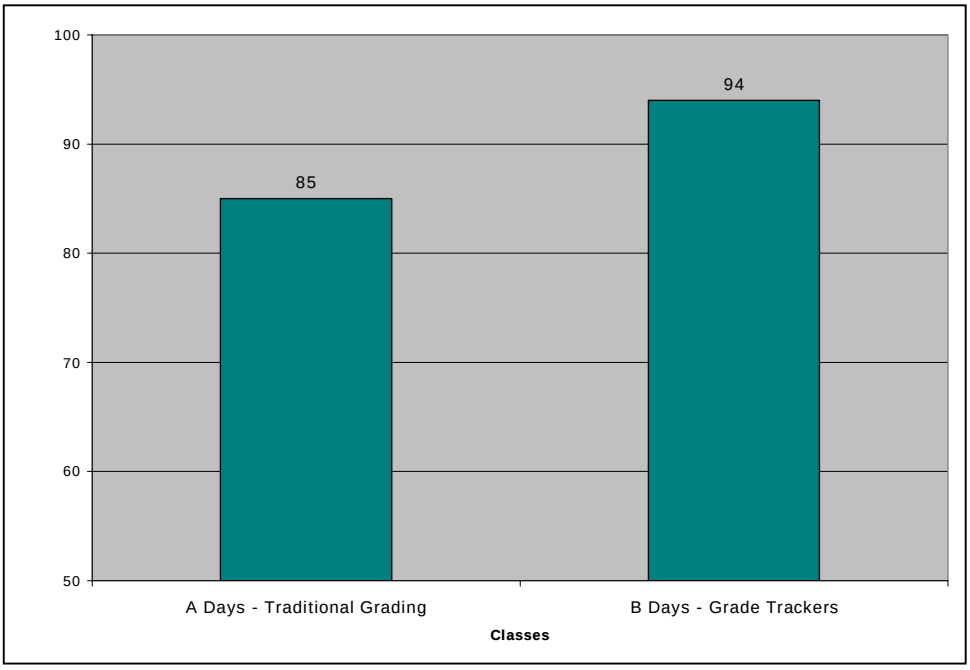
Sixth Grade – A/B Days Comparison:

The sixth grade orchestra was divided into two classes, A day and B day. During first semester the students were divided into like instrument classes, i.e.: violin class, viola/cello/bass class. Neither class used grade trackers during first semester. At semester time, the students were in a more traditional orchestra setting with all four instruments in each class. The A day students were not tracked (traditional group); the B day (tracked group) students used grade trackers.

Statistical Analysis. For the final grades, as predicted, the B day class using grade trackers (M = 94, SD = 12.4) received a higher average grade than the A day class, which did not use grade trackers (M = 85.0, SD =16.7), $t(22) = -1.83$, $p = 0.074$ (one-tailed). The results are statistically significant, and the grades show

improvement in the B day class, as illustrated in Figure 4.3. The difference in grades was nine percentage points.

Figure 4.3 **Comparisons between Sixth Grade A/B Day Final Grades**



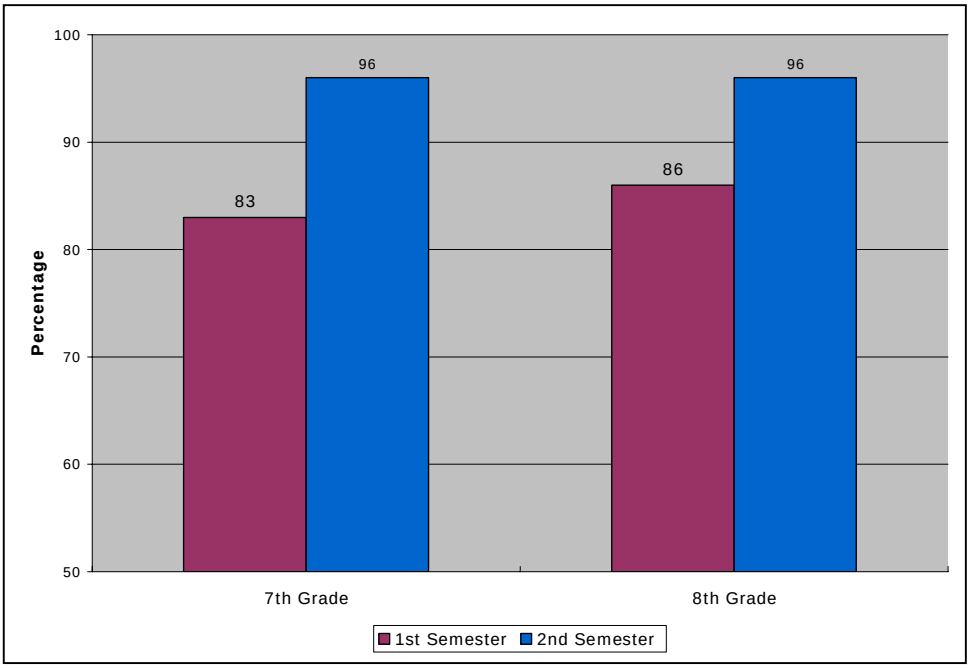
Seventh and Eighth Grade – Semester Comparison:

The seventh and eighth grade classes were set up the same way. Each class had all four stringed instruments: violin, viola, cello, and bass. Neither class used grade trackers during first semester. At semester time, the students were given grade trackers.

Statistical Analysis. In the seventh grade class, the grade trackers were used during second semester. The average final grade after this time (M = 95.6, SD = 5.23) was significantly higher than that of the first semester (M = 83.4, SD = 15.4), $t(17) = -3.11$, $p = 0.004$ (one-tailed). The results are highly statistically significant, and show an improvement of 13 percentage points, as illustrated in Figure 4.2. In the

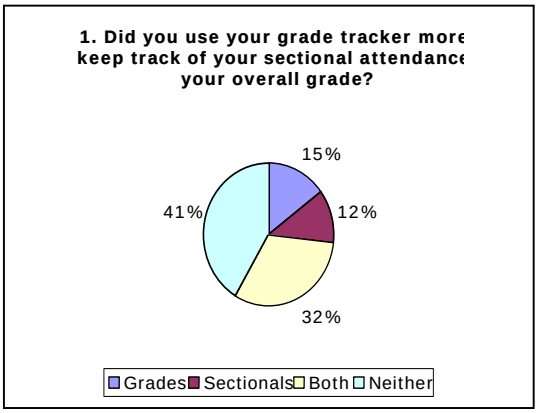
eighth grade class, the grade trackers were also used during second semester. The average final grade after this time (M = 96.1, SD = 9.14) was significantly higher than those of the first semester (M = 86.2, SD = 13.0), $t(24) = -3.04$, $p = 0.004$ (one-tailed). The results are highly statistically significant, and show an improvement of ten percentage points, as illustrated in Figure 4.4.

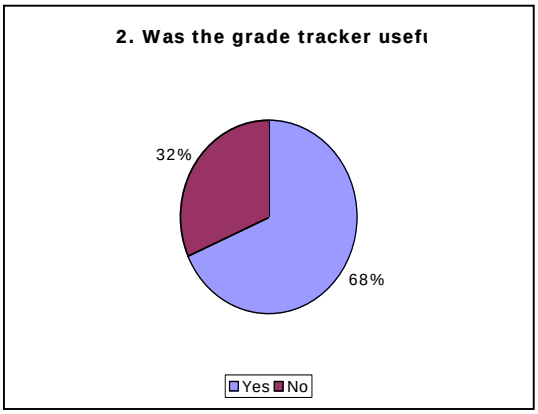
Figure 4.4 **Comparisons between First/Second Semester Final Grades**

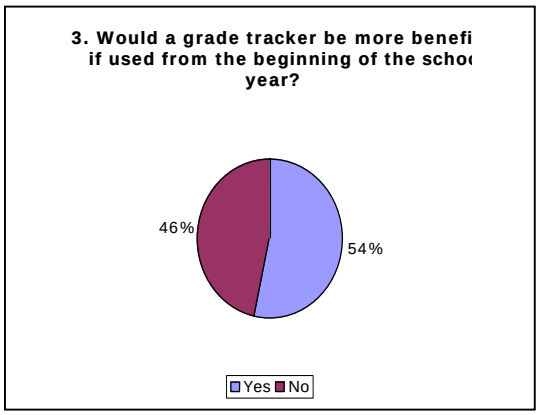


Closing Survey

The researcher asked the students who used grade trackers four sets of questions at the end of semester two. Only 63% of students (41 out of 65) completed the survey well enough to be valid. Many of the sixth grade students did not finish or participate in the survey. Only the classes that used grade trackers took the survey.







The fourth question of the survey was: What would make the grade tracker better?

-The eighth graders said not using grade trackers would make them better.

-The seventh graders said they were useful, but should have begun at the beginning of the year.

-The sixth graders did not think anything would make them better.

CHAPTER V

SUMMARY AND CONCLUSIONS

The results indicate that grade trackers had a positive influence on the sectional attendance and final grades of the students. Sectional attendance rose by an average of 14 percentage points. The final grade improved by an average of 10 percentage points. The statistical analysis shows that grade trackers were at least 90% significant in improving sectional attendance and at least 95% significant in improving overall grades.

The survey results are not a solid representation of the student population since not all students participated in the survey. Of those that did, the majority of them indicated that the grade tracker was useful, yet also indicated that they did not use the grade tracker for keeping track of both sectional attendance and final grades.

Conclusions

The data supports the hypothesis: using grade trackers will raise the orchestra students overall final grade and sectional attendance grade. It is not clear, however, that the second portion of the hypothesis is supported. The survey results do not show that grade trackers were instrumental in helping them (the students) to see how important each part of the orchestra grade is to the overall picture.

Recommendations

Based solely on the numerical data, the researcher will use the grade trackers during the 2006-2007 school year. This sectional attendance and final grade data will be analyzed to determine what affect the grade trackers had in both areas. If the results are positive, the grade trackers will be used in subsequent years.

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APPENDIX: GRADE TRACKER

Name:	My Grade Goal:

Hr:	Qtr: _____

Assignment	My Score	Points Possible	My Total Points	Total Points Possible	My %
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

WILL LISTENING TO CLASSICAL MUSIC BEFORE AND DURING TESTS HELP STUDENTS IMPROVE THEIR TEST SCORES?

By

CRAIG ERICKSON

A capstone submitted to the Faculty of the Graduate School of Winona State University

In partial fulfillment of the requirement for the degree of

Master of Science

Department of Education

April 2006

This capstone entitled:

Will listening to classical music before and during tests help students improve their test scores?

Written by Craig Erickson

Has been approved for the Winona State University Department of Education by

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Becky Breeser	Molly Fernholz
_____	_____
Ben Volker	Patrick Smith Outside Resource Professional
_____	Date _____
Dr. Thomas Sherman Faculty Advisor	

The final copy of the capstone has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

Erickson, Craig Henry William (MS, Education)

Will listening to classical music before and during tests help students improve their test scores?

Capstone directed by Dr. Thomas Sherman

Abstract

In the fall of 2004, a news article in the Post Bulletin stated that undesirable stresses make a person activate an enzyme in the brain called protein kinase C. This protein has been attributed to the cause of short-term memory loss and can interfere with other brain functions of the prefrontal cortex. The prefrontal cortex is the main decision making section of your brain.

For many students, various testing situations can increase their stress levels. With these increased stresses, students may be affected by the activation of the kinase C protein in their brain. Therefore, they may forget information they need to recall from their short-term memory. Providing students with a testing environment that can help them reduce unwanted stress could help them improve their test scores.

The purpose for this study was to compare the test results of two groups of students. The experimental group listened to classical music before and during their chapter tests while the control group did not listen to the music.

All of the students took six chapter tests during the study. The first three tests were given to all of the students of both groups in the same fashion with no music. The last three tests were given to the experimental group with classical music being played during the test and to the control group with no music being played.

Results from the study showed a slightly higher increase in the average test scores of the experimental group compared to the control group. The music group also had a higher percentage of students' increase their test scores during the study. The differences were, however, small enough to be statistically insignificant.

ACKNOWLEDGEMETNS

I would like to thank my wife Jane and family for the support they have given me which has allowed me to complete this capstone project.

I would like to thank Patrick Smith, my outside resource professional, and my capstone group for the input they have provided during the completion of my capstone project

I would also like to acknowledge the Winona State Learning Community Facilitators Dr. Tom Sherman, Heather Klees and Cheryl Moertel, as well as the members of the learning community, for their part in making this a challenging and enjoyable experience.

CONTENTS

CHAPTER

Will listening to classical music before and during tests help students improve their test scores?

CHAPTER I: INTRODUCTION

Need for the Study:

A recent news article in the Post Bulletin was titled "Stressed? Forget About it." In this article, Schmid (2004) stated that undesirable stresses make you activate an enzyme in the brain called protein kinase C (PKC). PKC is a protein that causes a short-term memory loss and interferes with other brain functions in the prefrontal cortex. The prefrontal cortex is the main decision making section of your brain.

For many students, various testing situations can increase their stress levels. With these increased stresses, students could be affected by the activation of the PKC in their brain. Therefore, they may forget information they need to recall from their short-term memory.

It is known that many students have test anxiety. Test anxiety and stress are directly related. The activation of the PKC in their brain may be the result. Students that are affected by test anxiety and the PKC may draw a blank and not be able to answer the test questions appropriately. There is a need for providing students with a testing environment that can help them reduce unwanted stresses.

Statement of the Problem:

Many students do not do well on tests because they say that they have test anxiety. Test anxiety could be a result of forgetting information because stress has activated the PKC in the pre-frontal cortex of their brain. If these exterior stresses could be reduced, it may provide students with the opportunity to produce better test results. Listening to relaxing music could reduce these unwanted stresses and help students recall information when answering questions on tests. The question of this study is, will listening to classical music before and during tests help students improve their test scores?

Statement of the Hypothesis:

Listening to classical music before and during a test will improve test scores for students more than those who do not experience listening to classical music. The music will help reduce stress and therefore, prevent the protein kinase C from interfering with the students' short-term memories.

Definition of Terms:

To clarify any confusion of terms, these definitions are given.

1. Stress – a physical, chemical, or emotional factor that causes bodily or mental tension and tends to alter an existent equilibrium.
2. Protein – any of numerous naturally occurring extremely complex substances that consist of amino-acid residues joined by peptide bonds.
3. Anxiety- an abnormal and overwhelming sense of apprehension and fear often marked by physiological signs such as sweating, tension, and increased pulse and having self-doubt about one's capacity to cope with it.

Variables:

Independent Variable:

In this study, one group of 11th and 12th grade chemistry students listened to classical music before and during the unit tests. The classical music was the independent variable.

Dependent Variable:

Test scores for both the experimental and control groups were recorded throughout the study. The students' chapter test scores represent the dependent variable.

Control Variables:

The study included a number of control variables. The students whose test scores were used for the study were taught using the same methods and materials. The students were all approximately the same age. All students received the same chapter tests, and the students took each of the chapter tests in the same classroom.

Moderator Variables:

A male teacher administered the tests. Some students may react differently to the classroom environment if it were a female teacher administering the tests.
The teaching style and personality of the teacher may be different than those of other teachers giving the same tests. These contrasts might have different effects on students.

Limitations (Delimitations) of the study:

In the study, there were some conditions that restricted the scope of the study or may have affected the outcomes and could not be controlled by the researcher.

The classes in the study will be taught at different times during the day. Many students react to stresses differently. The content of the unit may be more difficult to grasp for students of the control group than for those of the experimental group. Each class in the study may not have the same mix of ability levels, and the amount of time each student studies to prepare for the test is out of the researchers control.

CHAPTER II: REVIEW OF RELATED LITERATURE

Test Anxiety

Most teachers have had students who do well on assignments and answer questions in class correctly, but when it comes time to take a test, they completely forget information that they know. These students will study before the tests but draw a blank while taking the test. They maintain that they are poor test takers. In today's society, there is now a higher emphasis on testing. These students could potentially be limited in their educational and vocational opportunities. Most students, teachers, and parents will refer to this as test anxiety.

What is anxiety? According to Harris and Coy (2003), "anxiety is a basic human emotion consisting of fear and uncertainty that typically appears when an individual perceives an event as being a threat to the ego or self-esteem." Anxiety is a normal feeling in life and can often help by providing readiness for a test. However, Harris and Coy continue by saying that one of the most threatening events that cause anxiety in students today is testing.

Students are facing more and more testing situations. Along with these tests come the added pressures of performing well. Eggen and Kauchak (1992) state that "test anxiety is a relatively stable, unpleasant reaction to testing situations that lowers performance." Eggen and Kauchak (1992) also note that most theories of test anxiety suggest that it consists of two components. The emotional component can include symptoms such as increased pulse rate, dry mouth, and headache, as well as sometimes going blank. The cognitive component involves thoughts, such as worrying about failure and being embarrassed by a low score. During tests, test

anxious students are often unable to focus on the individual test items. Many students have the mental ability to do well on exams but do not do so because of high levels of test anxiety.

Students of all levels and abilities can be affected by test anxiety. Test anxiety occurs in varying degrees and is characterized by emotional feelings of worry (Supon, 2004). When students are not able to control their emotions, they may experience higher levels of stress, thereby making it more difficult for them to concentrate (Harris and Coy, 2003). Test anxiety can also cause students to rush through tests to avoid these undesirable physical experiences. Cheek, Bradley, Reynolds & Coy (2002) state that test anxieties may also create an '"invisible disability" of achievement stress that can occur throughout a students academic career.

Study of Stress and Memory Loss

New findings in a study on stress and memory loss may have something to do with why these students with test anxieties do poorly on tests. A team of researchers found that individuals in stressful situations were found to activate an enzyme in the brain called protein kinase C (PKC). Birnbaum et al. (2004) state that the data from the study suggests excessive activation of this PKC can disrupt prefrontal cortical regulation of behavior and thought. The prefrontal cortex is a higher brain region that regulates thought, behavior, and emotion. These operations are often referred to as working memory. The influence of PKC on the signaling of the prefrontal cortex's cognitive functions was tested. The studies showed that high levels of PKC in the prefrontal cortex, as seen during stress exposure, markedly impaired the working memory. This data indicates that excessive PKC activation can disrupt the prefrontal

cortex's regulation of behavior and thought. An outcome from the disruption of the prefrontal cortex is the loss of short-term memory (Birnbaum et al., 2004).

Short-term memory loss means that students could forget information that they normally would know. When taking tests, many students are in a stressful situation. The stresses could be activating the PKC enzyme in their brains and preventing them from recalling information needed to answer test questions. When looking at symptoms of test anxiety, there appears to be a connection.

Students and Stress

The study of the affects of stress and memory loss is meaningful for students because students are subjected to a significant amount of stress. Whitman (1987) proclaims that stress is difficult to define because individuals react to it differently, and a situation that is stressful for one person may not be for another. Both too little and too much stress can inhibit learning. Kaplan (1990) states that, "stress is the body's general response to any intense physical, emotional, or metal demand placed on it by oneself or others." Stress can occur even when everything is going well. Many students take on a variety of activities and demanding course loads. Students are in clubs, school activities, sports and part-time jobs. Doing all of these activities and doing them well is physically and emotionally stressful, even for the top students.

Many symptoms of test anxiety seem to have similarities between stress and short term memory loss from the protein kinase C. The State University of New York (2005) gives the following symptoms of test anxiety:

- Feeling tension as the exam is being passed out.
- Physical symptoms such as: increased heart rate, shortness of breath and perspiring.
- Negative thinking.
- "Blanking out" on information that you studied.
- Recalling information, upon leaving the classroom or a short period later.
- Frustrated with your grade on the exam because you know you were well prepared.

Music as a Source of Stress Reduction

Students that are under an enormous amount of stress need to find ways to help combat it. According to the University of Alberta Health Center (n.d.), relaxation techniques can combat the stress response and reverse some of the physiological effects of the stress response such as increased blood pressure, respiration and heart rate. There are many known methods of helping to reduce stress for students. Cheek, Bradley, Reynolds, and Coy (2002) indicate that adolescents often use music as one of their main stress-management strategies. Some teachers, to help improve their classroom environment, have used music. According to James (2000), background music in the classroom not only reduces stress, but it also motivates learning.

Numerous studies have shown that the anticipation of surgery produces a tremendous amount of stress for patients (Yung, Kam, Lau, and Chan, 2003). Doctors are also using music to help reduce stress before surgery. Kemper and Danhauer (2005) found that music enhances well being, reduces stress, and distracts

patients from unpleasant symptoms. They continue by saying that music appears to have direct physiological effects through the autonomic nervous system and effectively reduces anxiety and improves mood for medical patients.

In another study on the effect of music in managing preoperative stress for patients, Yung et al. (2003) found the following:

> Patients listened to twenty minutes of music of their choice. Pre- and post-tests of arterial pressure, heart rate, respiration rate, and state and trait anxiety were obtained for both study groups. After the music intervention, there were reductions in all dependent variables, with significant reductions in mean arterial pressure and state anxiety. No significant reductions were found for the control group in any of the physiological or psychological measures. The findings suggested that listening to music might be an effective method for reducing stress of patients from different cultural and ethnic backgrounds.

Stress can increase blood pressure levels and can damage the cardiovascular system (Chafin, Roy, Gerin, and Christenfeld, 2004). In a study, Chafin et al. (2004) found that participants who listened to classical music had significantly lower post-task systolic blood pressure levels than did participants who heard no music. Their data also suggests that listening to classical music may serve to improve cardiovascular recovery from stress, but not all music selections are effective. Other musical styles did not produce significantly better recovery than silence. Since classical music proved to be more effective for reducing stress in the above study, this study focuses on the use of classical music before and during tests as means of stress reduction.

CHAPTER III: METHODS AND PROCEDURES

Overview:

Two high school chemistry classes were selected for this study. The purpose of this study was to see if student test scores would improve after listening to classical music before and during their tests. The classical music was chosen as a means to help relieve tension and stress among the students. The study was performed during six chapter tests. One class period listened to the music before and during the test while the other period did not listen to the music. This study was quantitative as test scores were used as a measure to determine if listening to music would increase the students test scores.

Design:

The research data was collected during the second semester of the 2005 school year. The first three chapter tests of the study were given at the beginning of the semester and were distributed in traditional fashion. The classroom setting was also set up in traditional classroom fashion.

During the last three chapter tests of the semester, the selected experimental group listened to classical music before and during their tests. When this class entered the room on test day, soft classical music was playing and continued to play throughout the test. The test results of this class were then compared to the other chemistry class before and after the music was played.

The control group took each of the six tests without listening to the classical music. Each of their tests was administered in the same fashion and in the same classroom as the experimental group.

Selection of Subjects:

The study compared second semester chemistry students in period one with chemistry students in period four. The two classes had similar diversities of students. The ethnicity of the students was one hundred percent Caucasian for both classes. Period one had twenty-four students and period four had twenty-five students. These two groups were chosen for the study because of their many similarities. Fourth hour was selected out of random to be the experimental group, and first hour was selected to be the control group.

Both class periods met five days per week. Period one had class from 8:10 – 8:52 A.M. Period four had class from 10:36 – 11:18 A.M. All of the students were taught the same material with similar teaching methods.

Measuring Devices:

The measuring devices were the unit tests for Chapters 5 – 10 from the Holt Visualizing Matter chemistry textbook.

Validity Measures:

The same chapter tests and classroom were used for each of the tests for both period one and period five.

Reliability Measures:

Utilizing the same tests and classrooms for both periods should have produced consistent results.

Field procedures:

The independent variable was the use of classical music before and during the chapter tests. The music that was selected was from a compact disc titled "Meditation-Classical Relaxation Vol. 4." The pieces that the students listened to were selected based on the title of this music collection. The following is a list of the selections that were available on the compact disc:

1. GRIEG: Morning, from "Peer Gynt"
2. SCHUBERT: Standchen (Serenade)
3. TCHAIKOVSKY/MOZART: Preghiera (Ave Verum)
4. BEETHOVEN: Adagio sostenuto, from "Moonlight" Sonata
5. MOZART: Piano Concerto No.23 in A, 2nd movement
6. SCHUBERT: Intermezzo, from "Rosamunde"
7. MENDELSSOHN: Violin Concerto in E minor, 2nd movement
8. DVORAK: Serenade for String Orchestra, 1st movement
9. BIZET: Intermezzo, from "L'Arlesinne" , Suite No. 2
10. RODERIGO: Concerto de Aranjuez, 2nd movement
11. SCHUBERT: "Trout" Quintet- Theme and Variations

For the chapter tests 1-3, both groups took the tests in the same fashion. Neither group listened to the classical music during tests 1-3. During tests 4-6, the experimental group, period four, listened to the classical music before and during their tests. The dependent variable was the test scores for these tests.

On the test day, classical music was playing as the experimental group entered the room and continued to play throughout the test. The control group entered the classroom on test day without the music playing. Their tests were administered and taken in the same manner as the experimental group with the exception of the music being played.

Conclusion:

The researcher of this study designed it with the question, will listening to classical music before and during chapter tests improve test scores? The intentions for the classical music were to help reduce the stress levels of the students and therefore, prevent the protein kinase C enzyme from being activated. The activation of this protein could cause short-term memory loss. The significance of this study is that students' test scores did increase and positive feedback was given by several of them. Hence, classical music should be used as a relaxation technique to help reduce stress levels for the students taking exams.

CHAPTER IV: RESULTS AND DISCUSSION

The students were tested to see if listening to classical music before and during chapter tests would improve their test scores. The results of this study showed that test scores of the experimental group did improve more than the test scores of the control group. These were the desired results of the study.

Results:

The student test scores were collected from periods one and four during six chapters tests. The individual test results for each student on each of the chapter tests are shown in Figures 1and 2. The average of the test scores for tests 1-3 were calculated for each period and then, the average of the test scores for tests 4-6 was calculated for each period. This allowed for the researcher to measure a difference in test scores as a result of the independent variable. These differences for each student in both the experimental group and control group are also shown in figures 1 and 2. The chapter tests 1-3 were taken in the same fashion with no music playing for either class. For the chapter tests 4-6, the experimental group listened to classical music before and during their tests while the control group did not. The following discussions and graph are based on these results.

Figure 1. Experimental Group (Period 4)

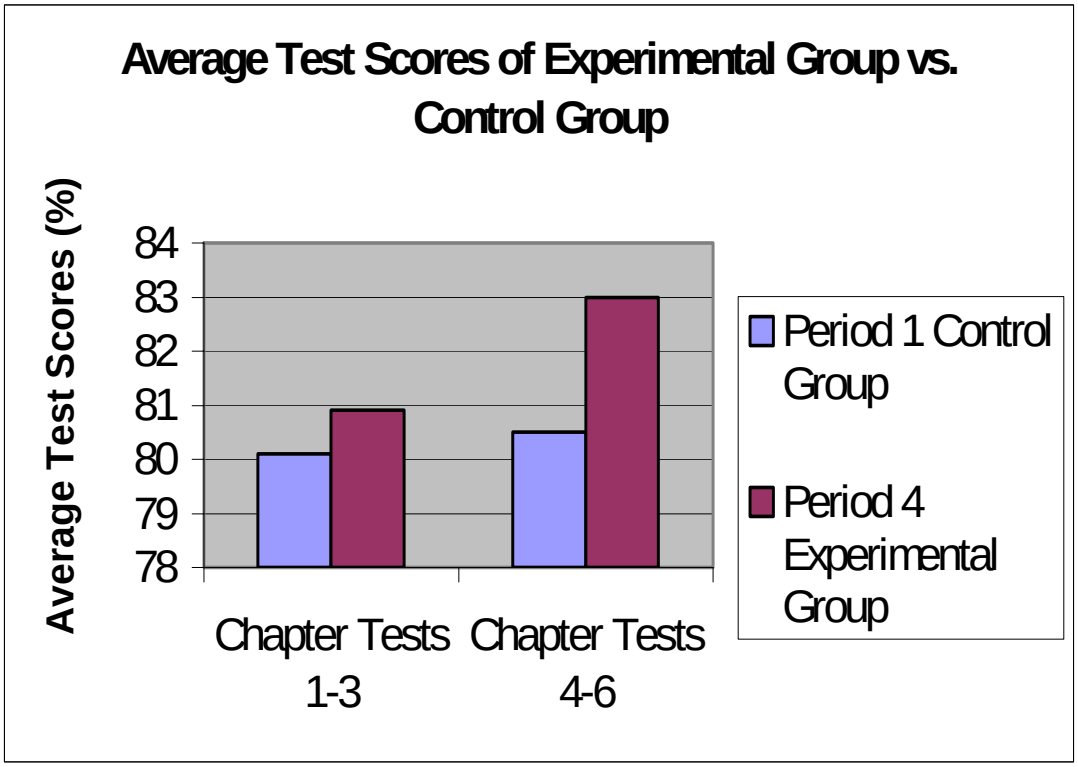
Student #	Test 1	Test 2	Test 3	Average	Test 4	Test 5	Test 6	Average	Difference
1	72	78	72	74.0	73	62	82	72.3	-1.7
2	88	90	82	86.7	95	91	87	91.0	4.3
3	60	58	58	58.7	59	71	56	62.0	3.2
4	75	78	80	77.7	79	84	62	75.0	-2.7
5	88	98	92	92.7	94	100	100	98.0	5.3
6	54	80	77	70.3	74	89	71	78.0	7.7
7	89	82	83	84.7	88	84	93	88.3	3.6
8	57	73	65	65.0	68	58	53	59.7	-5.3
9	82	80	83	81.7	89	80	87	85.3	3.6
10	55	75	57	62.3	70	60	62	64.0	1.7
11	100	98	98	98.7	100	100	96	98.7	0
12	88	88	93	89.7	100	91	98	96.3	6.6
13	92	95	83	90.0	88	89	93	90.0	0
14	89	95	88	90.7	91	96	89	92.0	1.3
15	78	93	72	81.0	70	91	96	85.7	4.7
16	63	75	70	69.3	65	76	62	67.7	1.6
17	97	95	93	95.0	95	96	98	96.3	1.3
18	91	93	85	89.7	91	98	98	95.7	6
19	65	67	73	68.3	50	71	80	67.0	-1.3
20	91	82	90	87.7	94	96	91	93.7	6
21	78	72	80	76.7	92	98	78	89.3	12.6
22	92	92	87	90.3	88	91	96	91.7	1.4
23	62	72	53	62.3	55	42	51	49.3	-1.3
24	83	88	85	85.3	94	96	89	93.0	7.7
25	94	97	93	94.7	97	89	100	95.3	0.6
Avg.	79.3	83.8	79.7	80.9	82.4	84.0	82.7	83.0	2.1

Figure 2. Control Group (Period 1)

Student #	Test 1	Test 2	Test 3	Average	Test 4	Test 5	Test 6	Average	Difference
1	37	75	75	62.3	65	64	73	67.3	5
2	95	97	92	94.7	95	96	96	95.7	1
3	75	90	93	86.0	95	87	80	87.3	1.3
4	80	88	77	81.7	88	87	78	84.3	2.6
5	95	97	93	95.0	94	100	100	98.0	3
6	80	83	80	81.0	79	78	76	77.7	-3.3
7	72	75	67	71.3	74	51	71	65.3	-6
8	52	53	72	59.0	62	62	64	62.7	3.7
9	69	73	78	73.3	73	64	91	76.0	2.7
10	78	82	83	81.0	83	87	62	77.3	-3.7
11	74	65	82	73.7	59	67	73	66.3	-7.4
12	92	93	93	92.7	92	98	89	93.0	0.3
13	89	80	82	83.7	79	62	84	75.0	-8.7
14	75	90	85	83.3	88	89	93	90.0	6.7
15	78	73	93	81.3	92	93	89	91.3	10
16	68	92	73	77.7	80	71	58	69.7	-8
17	75	85	77	79.0	82	87	80	83.0	4
18	86	85	90	87.0	86	82	91	86.3	-0.7
19	94	92	97	94.3	92	100	100	97.3	3
20	69	63	68	66.7	68	62	60	63.3	-3.4
21	69	82	85	78.7	80	87		83.5	5.8
22	74	73	48	65.0	67	69		68.0	3
23	85	73	90	82.7	89	80	84	84.3	1.6
24	89	93	92	91.3	88	96	84	89.3	-2
Avg.	77.1	81.3	81.9	80.1	81.3	80.0	80.7	80.5	

The data shows that the average test scores for the experimental group increased by 2.1 % from tests 1-3 to tests 4-6. The average test scores for the control group increased by only 0.4% from tests 1-3 to tests 4-6. Figure 3 on the following page shows these results.

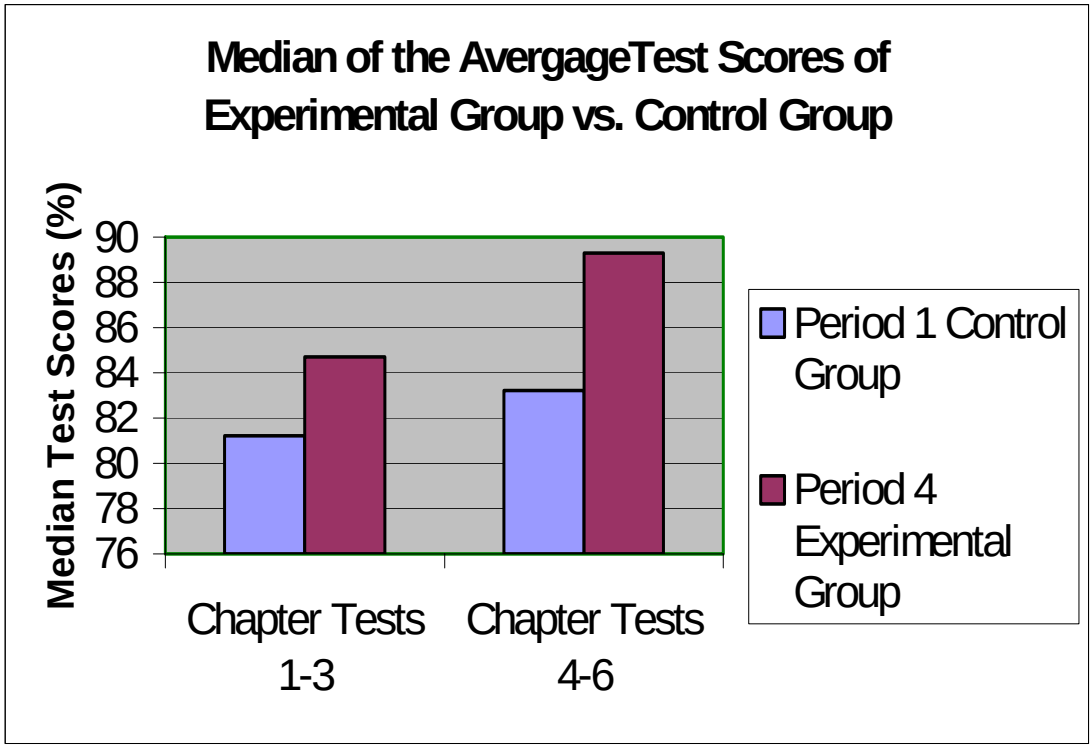
Figure 3.



The same comparison was made with the median of test scores for each period for chapter tests 1-3 and chapter tests 4-6. The median test score increased from 84.7% to 89.3% for the experimental group and from 81.2% to 83.2 % for the control

group. Again, the experimental group showed a larger increase for these results. Figure 4, illustrates these results.

Figure 4.



The percentage of students that increased, decreased or had no change in their average test scores from chapter tests 1-3 and chapter tests 4-6 was calculated. For the experimental group, the results showed that 68 % of the students had an increase, 24 % of the students had a decrease, and 8 % of the students had no change with their test scores. For the control group, 62 % of the students had an increase, 38 % of the students had a decrease and 0 % of the students had no change with their test scores. The percent of students in the control group that had a decrease in score compared to

that of the experimental group stands out more than the percent of students that had an increase in their scores. Figures 5 and 6 show these results.

Figure 5.

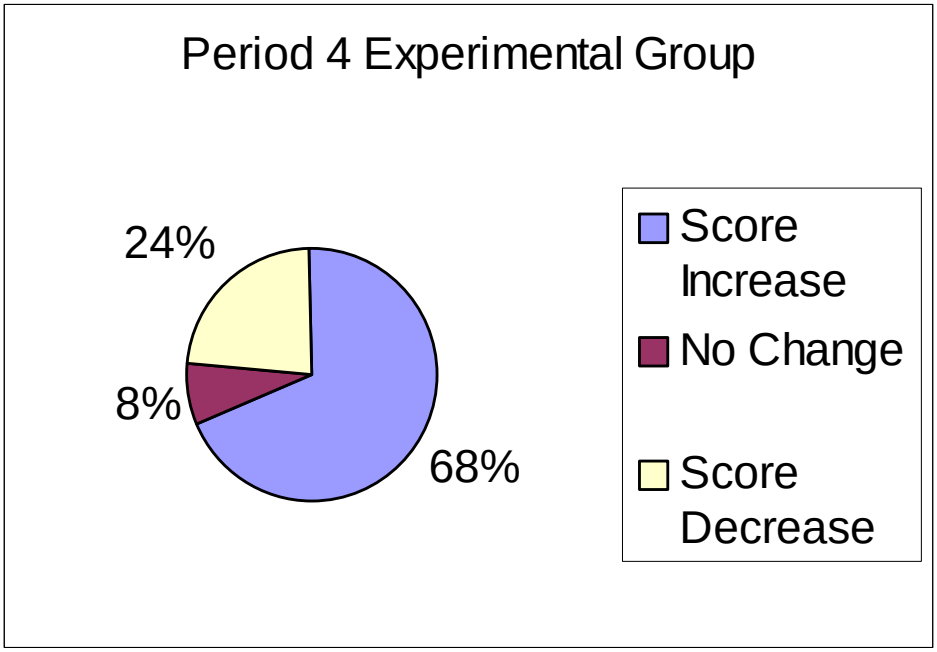
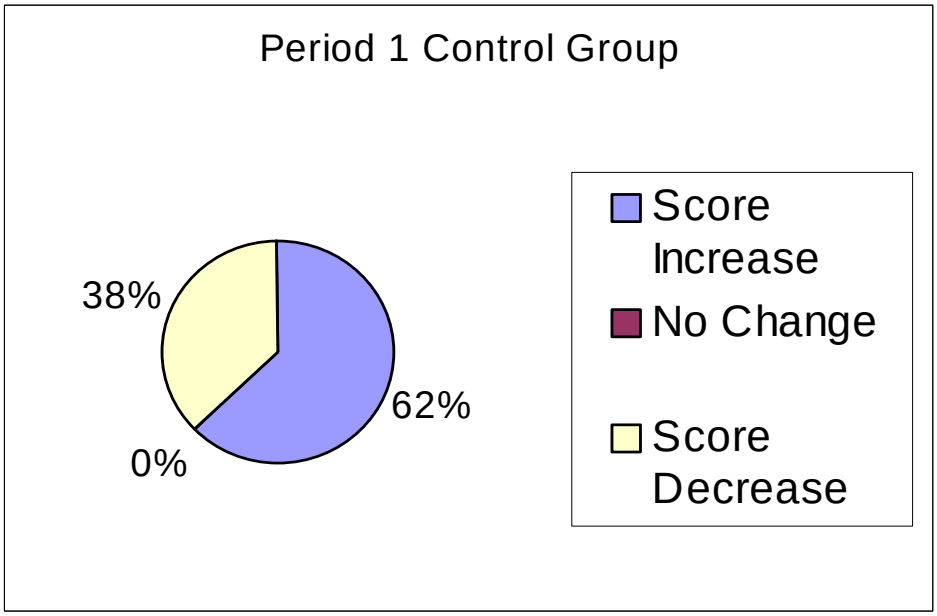


Figure 6.



Variables:

Since the experimental group took the chapter tests after the control group, some students from the experimental group may have discussed test questions with students of the control group before taking the test. Because the same test was administered, this could have had an affect on the results of the students in the experimental group. The same test was given to both groups because it was one of the control variables. If a different test had been given, it would have been more difficult to measure the effects the classical music had on the students.

Discussion:

The results of the study all tend to favor the experimental group over the control group. The increase of 2.1% on the test score average for the experimental group versus a .4% increase in test score average for the control group appears to stand out as fairly significant data. The number of students that increased their scores, 68% for the experimental group vs. 62% for the experimental group, also emerges as significant, but the number of students that decreased in score stood out as well. For the experimental group, only 24 % of the students had a decrease in scores and for the control group, 38 % of the students had a decrease in test scores.

Hypothesis Testing:

To test the hypothesis of the study, the researcher used the website, http://www.physics.csbsju.edu/stats/t-test.html, to conduct t-tests on the data. Three t-tests were run. The first test was between the average test scores of tests 1-3 and tests 4-6 of the experimental group. The second test was between the average test scores of tests 4-6 for the experimental and control groups. The third test was between the

amount of change between the average test scores of tests 1-3 and tests 4-6 for both the experimental and control groups. Figure 7 shows the results of the t-tests and the data collected during this study.

Figure 7.

	Period 1 Tests 1-3	Period 4 Tests 1-3	Period 1 Tests 4-6	Period 4 Tests 4-6	Period 1 Gain/ Loss	Period 4 Gain/ Loss
Mean (%)	80.1	80.9	80.5	83.0	.437	2.08
Standard Deviation	10.2	11.7	11.3	14.3	4.87	5.04
Hi/Low (%)	95.0/ 59.0	98.7/ 58.7	98.0/ 62.7	98.7/ 49.3	10.0/ -8.70	12.6/ -13.0
Median (%)	81.2	84.7	83.2	89.3	1.45	1.70
Ave.Absolue Dev.-Median	7.71	9.76	9.53	11.1	3.82	3.69
t-score		-.565	-.683	- -	-1.16	-
sdev		13.1	12.9	- -	4.96	-
Probability		.575	.498	- -	.252	-

These t-tests used a risk level (called the alpha level) of 5 %. This is a standard level used in research as the criteria for rejecting the null hypothesis. This means that five times out of a hundred you would find a statistically significant difference between the means even if there were none by chance. If the probability is

less than, or equal to, this significance level, then the null hypothesis is rejected, meaning the outcome is statistically significant. If the probability is greater than the significance level then the null hypothesis is not rejected. This means that the outcome is not statistically significant and the results could be a matter of chance.

For the t-tests of this study, the number of degrees of freedom was $(24 + 25) – 2 = 47$. A difference between the means would be determined to be significant if the calculated t-value was greater than 1.98. The table in Figure 7 shows the calculated t-test results for each of the tests performed. None of the t-test values were above the needed 1.98 to be determined scientifically significant. The experimental group's higher increase in test scores could be due to chance. Even though none of the results are determined to be scientifically significant, the t-score was the highest for the differences in the individual increases and decreases between the experimental and control groups. Therefore, these results proved to be the most significant of the three comparisons that were made.

CHAPTER V: SUMMARY AND CONCLUSION

Introduction:

Listening to classical music before and during tests did improve student test scores. These improved test results could indicate that the stresses of the testing environment may have been reduced as a result of the classical music being played.

Summary of Results:

The results show that the average of the test scores of the experimental group did increase more than the average test scores of the experimental group. There were also a higher percentage of students in the experimental group that increased their test scores and fewer with decreased test scores. The t-test results showed that the differences between the experimental group and control group were not statistically significant. This means that the results could be simply a matter of chance.

What the results did not show was some of the positive feedback from some of the students. There were not any students that objected to the music being played or to the type of music that was selected. Several students did suggest that the music helped them relax and that they were now listening to classical music while at home studying.

Conclusions:

The hypothesis of the study was listening to classical music before and during a test will improve test scores for students more than those who do not experience listening to classical music. The researcher feels that listening to classical music before and during tests was effective, even though it was not determined to be statistically significant. The study was backed by the research of medical doctors that

classical music does reduce unwanted stresses before surgery. The reliability and significance of the study could improve if new students and different class periods are studied.

Recommendations:

Even though the calculated t-value of the two means showed that the data was not statistically significant, the researcher feels that there was enough evidence demonstrated to continue with the use of classical music during tests. Further studies could be performed to verify that the use of classical music before and during tests is in fact statistically significant.

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WILL STUDYING FOR SPELLING TESTS INCREASE SCORES IF TIME IS SPENT IN CLASS STUDYING IN ENTERTAINING WAYS?

by

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B.A. Wayne State College, 1998

A capstone submitted to the

Faculty of the Graduate School of Winona State University

in partial fulfillment of the requirement for the degree of

Master of Science

Department of Education

April 2006

This capstone entitled:

Entertaining Ways to Help Increase Spelling Test Scores

written by: Jane Erickson

has been approved for the Winona State University Department of Education by

Dr. Thomas Sherman (Faculty Advisor)	Mike Kesler
Brian Menk	Patrick Smith (Outside Resource)

The final copy of this capstone has been examined by the signatories, and we find that both the content and form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

Erickson, Jane (M.S., Education, Department of Education)

Entertaining Ways to Help Increase Students' Spelling Test Scores

Capstone directed by Dr. Thomas Sherman

Abstract

Several second grade students were not performing well on weekly spelling tests. Each student received a list of words on Monday and would be tested on Friday. Time was limited to study during school hours, resulting in low test scores. Students' scores were not as high as they could have been. This study included 19 second grade students and took place over a six week period of time.

During this six week study, the first three weeks the students were given no time to study during the school day and the low scores were consistent. During the second half of the study, fifteen minutes were spent each school day studying spelling words in a variety of fun and entertaining ways. Each spelling list consisted of eight phonics focus words relating to the Scott Forseman basal reader stories of the week, three priority words, or high-frequency words, and one challenge word relating to a unit being studied in math, science or social studies. See Appendix A for a list of words the children were tested on during the study. When class time was used to study for the spelling tests, the students played a variety of games, chanted or cheered the letters in the spelling words.

There was a significant increase in spelling test scores among numerous students. It was observed they all had fun during the study sessions. Most importantly, the graphs helped the students observe how time spent studying for tests can help ensure a higher grade on the spelling tests.

ACKNOWLEDGEMENTS

I would like to thank my husband, Craig, my parents, Dick and Pat Fechter, my outside resource colleague, Patrick Smith and my advisory group members, Mike Kesler and Brian Menk, for their encouragement, support, and help with and during this capstone project.

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CHAPTER 1: INTRODUCTION

Need for the Study

There are several reasons to improve spelling among young students today. When children are aware of the correct spelling of words, they in turn become better readers. Being unsure of words in a story can hinder comprehending the story. Children have trouble with comprehension for one of three reasons: the text is too difficult, they are having difficulty with decoding or their reading fluency is weak. A child in second grade should be able to decode 90% of words without help. If they have difficulty with decoding and need to stop reading frequently, they will have trouble with comprehension. The constant stops don't allow for focus on meaning of a story ("Reluctant Readers" n.d.). Most words second grade students are learning to spell are common words needed in everyday reading and writing to last a lifetime.

Statement of the Problem

Teachers have little control over factors that contribute to students' interest level in learning. However, teachers can influence student motivation. There are ways teachers can make learning more engaging and effective (Brewster, Fager, 2000). One way is by making studying for a spelling test fun and entertaining.

Purpose of the Study

The purpose of this study was to discover if children practiced for spelling tests in fun and entertaining ways, would they retain the correct spelling for the end of the week test? The students were also able to gain positive study habits.

Statement of the Hypothesis

Students will score higher on weekly spelling tests after spending fifteen minutes daily using fun and entertaining ways to study verses using their own time to study independently.

Definition of Terms

Word Recognition:	The ability to identify printed words and to translate them into their corresponding sounds quickly and accurately so as to figure out their meanings.
Word Walls:	Word-study and vocabulary words that are posted on the classroom wall so all children can easily see them.
Phonological Awareness:	The understanding that spoken language is made up of individual and separate sounds. Phonological awareness activities can involve work with rhymes, words, sentences, syllables and phonemes.
Phonemic Awareness:	The ability to hear and identify the individual sounds in spoken words
Phonics:	The relationship between the sounds of spoken words and the individual letters or groups of letters that represent those sounds in written words
Developmental Spelling:	The use of letter-sound relationship information to attempt to write words
Invented Spelling:	The use of letter-sound relationship information to attempt to write words

Irregular Words:	Frequently used words that do not follow the letter-sound relationship rules that children are learning
Sight Words	Words that a reader recognizes without having to sound them out.

Variables

In this study, the independent variables included games, rhymes, chants and cheers used to help study for the weekly spelling tests. All of the children were given the same amount of time each day to study the words in the same ways. The children actively studied their spelling words by playing games, chanting or cheering the spelling words in many different ways. Depending on the amount of time per activity, some days only one study technique was used while other days several were implemented. The dependent variable consisted of the spelling scores the children received on each test.

Limitations and Delimitation of the Study

There was no control over students being absent from the classroom due to illness or other cause to be away from the classroom. If a student was absent from the classroom during a 15 minute practice session in preparation for Friday's spelling test, they missed helpful ways to increase their spelling test score.

The difficulty of words tested in any given week may also have hindered the scores of some students' tests. Some students may have needed extra time to study outside of our 15 minute classroom time given each day. I had no control over parental involvement outside of the school.

CHAPTER II: REVIEW OF RELATED LITERATURE

Introduction

"*Our penchant for borrowing and creating new words out of parts of old words has given us a rich language but one in which spelling is not uniform and therefore not easy* (Spelling, n.d.). The English spelling system is a very difficult language to learn to spell. *The fact that the system is a mess does not excuse us from learning to spell (Spelling, n.d.).*

The roots of the English language are in the Anglo-Saxon language, which is a German language. Due to invasion, the original language was influenced by the Scandinavian and French languages. English speakers borrowed words from all over the world from different language groups they encountered (Spelling, n.d.).

How Spelling is Learned

There are two types of spellers: visual spellers and auditory spellers. The visual spellers have learned to spell from looking at the correct spelling of words on printed pages while they read. The spelling of words looks right to them. If they are asked to spell a word that is unfamiliar to them, they may need to write the word down to see how the word looks. They are able to spell words they may not be able to pronounce.

The auditory spellers learn best when they hear the word. They are able to sound out the words because of the letters that represent each sound. They are able to pronounce words they may not know the meaning of.

These two methods do not work consistently. To be good spellers, alternative measures must take place to become accurate spellers ("Spelling" n.d.).

Inventive Spelling

As children begin to write, inventive spelling is natural and is usually encouraged. This strategy helps children think about sounds in the words and how those sounds are related to the letters. Near the end of first grade, inventive spelling methods should be taken over by conventional spelling. If some of the most commonly used words are consistently spelled incorrectly, it becomes difficult to learn the correct spelling of such words (Sitton, 1994). Children need an organized type of spelling lesson to help them become strong spellers (Armbruster, Lehr, Osborn, 2003).

Teachers have the ability to help students in a motivating way to make the transition from inventive spelling to conventional spelling. Students can be "proofreaders" and search for words in their writing such as "the" and "of" to be certain they are spelled correctly. More "proofreading" such sight words may be added to help students develop a positive outlook toward spelling.

The belief that inventive spellers would not learn poor spelling habits has changed over the years. The inventive spelling philosophy lowered the importance of spelling to both teachers and students. Teachers need to have the expectations their students are capable of being strong spellers (Sitton, 1994).

Strategies that Motivate

There are rules to spell words such as, "When two vowels go walking, the first one does the talking." This particular spelling rule, along with several other spelling rules, only applies less than fifty percent of the time ("Literacy Connection" n.d.). Using these rules is not the best way to teach spelling. People retain the greatest

amount of information by active involvement and practice. With spelling, this type of studying allows children to see word and letter patterns for themselves. The brain is not an applier of rules, but a pattern detector. Students should be given the opportunities to organize those patterns ("Literacy Connections" n.d.).

Children need a variety of skills and strategies to achieve success as they become readers and spellers. Different instructional approaches may help children retain the correct spelling of words (Beech, 1999). Children may do well on a spelling test because they were required to memorize them for a Friday's test. A sign of literacy is having the ability to spell well. Spelling is not about memorizing how to spell particular words; rather it is a skill of constructing words. Teachers can reinforce spelling instruction on numerous ways. When learning how to spell words for a test, students can be provided with activities which will stimulate and trigger the memory to retain how words are spelled. When learning how to spell through songs, games, chants or other entertaining ways, the mind is able to remember long after the test is given.

In order to be successful spellers, students need to be provided with activities which provide visual, auditory and kinesthetic reinforcement. In order to spell words correctly, a clear visual perception of the order of letters in a word is required. This is due to the English language having many of the same sounds being spelled in many different ways. One effective study strategy is looking at a word while simultaneously hearing or saying the spelling of the word. Enhancing spelling lessons in any way helps foster an interest in spelling words correctly.

For students to retain the correct spelling of words in the most effective way, they need practice to help reinforce concepts and rules they are learning about word structure. Using auditory, visual and kinesthetic approaches to studying spelling provides the reinforcement students need to place words in their long-term memory (Leber, 1999). Other research shows that people remember information most easily when they meet it in an emotional context (Katz,1999). For instance, a child is more likely to learn the spelling of a word through the excitement of a drill than by dispassionately copying the letters (Sweet Sounds, 2005). Children are more apt to learn when they are engaged in interaction rather than taking part in passive activities (Katz, 1999).

Word Walls

Displaying a word wall in the classroom may help students who are having difficulty recognizing sight words. A word wall is a collection of words in large print where they can be easily seen from anywhere in the classroom ("Word Wall" n.d.). Word walls were designed to help in the promotion of group learning, however; it is a great classroom tool for individual students as well. Word walls provide a visual for students to recall connections between words, helps aid students who are learning to read and spell new words, fosters independence, promotes reading and writing and hold students accountable for spelling specific words correctly at all times (Callella, 2001). Simply having a word wall in the classroom is not going to ensure successful spellers. The students need to interact with the words in order to learn the correct spelling of the words. Activities need to take place daily in order for students to achieve success ("Word Wall" n.d.). Activities can include

chants, cheers and other games or activities to get all of the students interacting with each other and their spelling words ("Interactive Word Walls" n.d.).

Several word walls may be visible in a classroom. One type of wall is a "priority word" wall. This consists of the most frequently used words and can be eight feet by six feet or larger. Other smaller walls may be displayed in the room. Children may use these walls as a resource to actively study for spelling words ("Interactive Word Walls" n.d.).

Study Habits

Effective study skills must be put into practice in order to improve in school. One cannot simply think about studying, it actually needs to be done. Each person is different and ways in which people study are different as well. For some, studying and being motivated comes naturally (Kizlik 1997). For those who are not naturally motivated, teachers can help in the motivational process to get children excited to study (Brewster, Fager 2000).

CHAPTER III: METHODS AND PROCEDURES

Overview

The students involved in this study were tested over a six week period of time. During the first three weeks of the study, students were given the words at the beginning of the week. Students were on their own to study during non-classroom hours for the tests which took place on Fridays. The last three weeks of the study the students were given the words on Mondays; however, each child was given approximately 15 minutes daily to study for each test on Fridays. A variety of study mechanisms was used to help ensure each child performed well on each test. The students would practice by playing motivational games, chanting or cheering their spelling words during a study time each school day. Student helpers would choose a way or ways to study each day by drawing a card out of a "study dish" with the title of a game or activity listed on each card. Some of the activities required the full 15 minutes to fulfill the activity's objective, while other activities lasted only a few minutes. In such cases, more than one study tactic was used on those particular days.

Research Design

Students did not use class time to study for their spelling tests for the first three tests during the study. The children were expected to find time on their own to prepare for their tests. During the second half of the study, the students were given at least 15 minutes per day to study their spelling words.

During the weeks when studying took place in the classroom, the students prepared for each test in a variety of ways. There were whole group study times as well as small group and individual times to study. The activities used consisted of

orally spelling the words during games, chants or cheers. The students also wrote the words on paper or individual white boards when illustrating words, doing a crossword puzzle or creating a crossword puzzle, word talks or other games. The students always had access to a priority word wall, or high frequency word wall. This particular word wall was displayed in the back of the classroom with room for 140 high frequency words well visible from anywhere in the classroom. A second word wall was added during this study for the final three weeks. This word wall included the eight phonics focus words, three priority words and one challenge word the students needed to know for each test. After each test, the eight phonics focus words and challenge word were removed. The three priority words were added to the word wall in the back of the classroom for the remaining school year.

Subjects

The students used in this study consisted of 19 children including 11 males and 8 females. Their ages ranged from seven years old to nine years old. Five students received Title I aid in math and language arts. Six students worked at grade level with two of them having been retained in first grade. Eight students worked above grade level and needed to be challenged in all academic areas. Two students were medicated for Attention Deficit Hyperactive Disorder and performed at grade level when medicated.

Instruments

Students' spelling tests were scored weekly during the six week study. The students were given a spelling pretest each Monday and tested over the words on the following Friday. The spelling lists were made up of eight words based on the

phonics lessons that were covered each week from the Scott Foresman Reading Series. There were three priority, or high frequency words, and one challenge word which related to a math, science or social studies unit being studied that particular week. Each student was tested over the same words in the same way.

Validity Measures

The validity of this test was positive because a significant increase took place during the weeks the students actively studied for their spelling tests verses not studying for their tests.

Reliability Measures

The reliability of this test was also positive. The results during the second part of the study consistently increased after time was spent during school hours to study in motivational ways. The students spent at least 15 minutes daily studying in various entertaining ways for each Friday test during the final three weeks of the study. The test each Friday was always given at the same time by the same teacher.

Procedures

All students participated in the six week study to increase spelling scores. They all received a spelling list on Mondays. For the first three weeks of the study, the students were expected to use their own time outside of school hours to study for each Friday test. No extra class time was given to help students practice for their spelling tests. During the second half of the study, the students received the spelling list and spent at least 15 minutes daily preparing for each test. There was a variety of ways to study. A selection of study methods allowed the students to work as a whole

group, while other study methods gave them opportunities to work individually or in a small group setting.

Each week the eight phonics words, three priority words and one challenge word were placed in a "word dish." The word dish contained all of the words the children were tested over each week. There were several games the children played to encourage and motivate study time. Most of the games involved the words being pulled out of the word dish.

The time of day each pretest and posttest was given occurred at the same time in the morning. The study times varied during the morning, but study time did take place before lunch. The same teacher was always in the room supervising, observing and helping the students with the spelling practices.

Conclusion

This study measured the increase between spelling test scores over words that were not studied during class time and spelling test scores over words that were studied in a variety of ways during school hours. All 19 students participated in the study and all prepared for the tests in the classroom in the same way. The same teacher was always present to help during the practice time as well as the testing times.

CHAPTER IV: RESULTS AND DISCUSSION

Introduction and Procedures

Some students struggled with receiving high scores on weekly spelling tests. There was no motivation to get those particular students to earn higher grades on spelling tests. A study was conducted to motivate students to actively study spelling words to increase spelling test scores.

A second grade class consisting of 19 students took part in this study. This study took place over a six week period. The first three weeks of the study the students were given the spelling words and were given no class time to study. The same students consistently received lower test scores. During the final three weeks of the study, students were given the spelling words on Mondays and a time period of at least 15 minutes was spent daily on various activities to help prepare them for each Friday test.

The various ways to study for the tests were: playing a variety of motivational games, chanting or cheering the letters of the each spelling word aloud. The different ways in which to study were separately written on strips of paper and placed in a "study dish." A list of motivation study techniques used during this study can be found in Appendix B. A student was chosen daily to pull a study strip out of the study dish and explain to the rest of the class how everyone was to study for their spelling words that day.

The results of this study show an increase in test scores after students were given time to study in motivational ways for spelling tests. This was the desired outcome of the study. Students' test scores were collected after each test and an

average was calculated for each test. Students did not spend class time studying for spelling tests during tests one through three and had a mean score of 10.7. Tests taken after studying had a mean score of 11.7. Figure 4.1 indicates each test during the first half of the study remained under 10.8. The same graph also shows tests taken during the second half of the study improved and remained above an 11.6. Individual test scores for each student are shown in Figure 4.2.

Figure 4.1

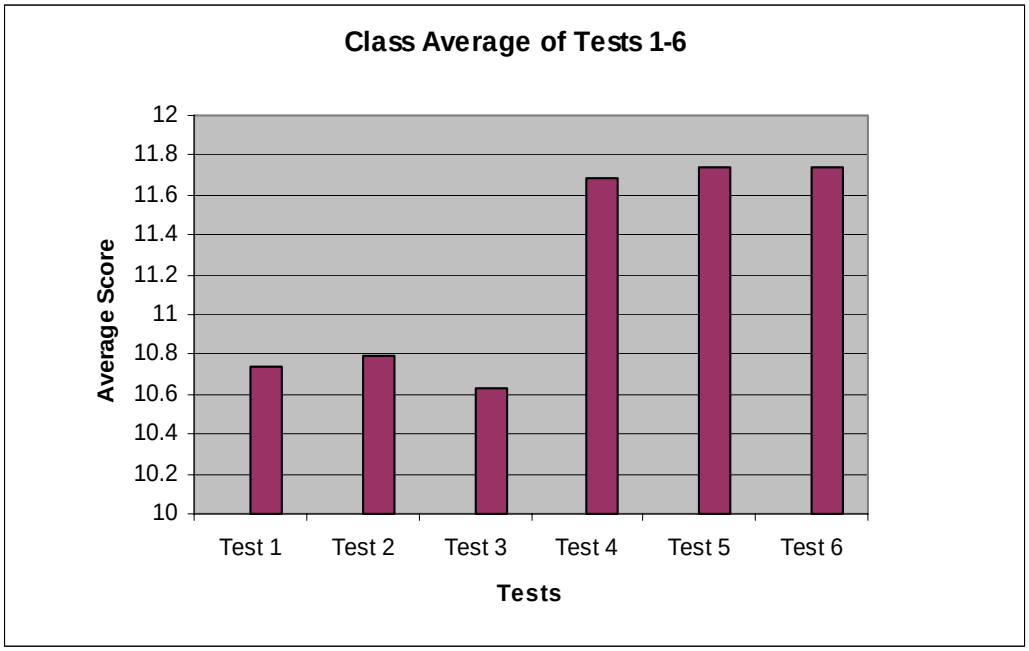


Figure 4.2 shows how each student achieved on each individual test throughout the study. The test averages are shown as well from both parts of the study. The students' averages increased from 11.7 to 10.7.

Student #	Test 1	Test 2	Test 3		Test 1-3 Avg.		Test 4	Test 5	Test 6		Test 4-6 Avg.
1	8	9	4		7.0		10	12	12		11.3
2	10	11	11		10.7		12	11	11		11.3
3	7	3	8		6.0		12	12	12		12.0
4	12	12	12		12.0		12	12	12		12.0
5	12	12	12		12.0		12	12	12		12.0
6	6	8	7		7.0		8	9	9		8.7
7	12	12	12		12.0		12	12	12		12.0
8	9	10	12		10.3		12	12	12		12.0
9	10	11	10		10.3		12	12	12		12.0
10	12	12	12		12.0		12	12	12		12.0
11	12	12	12		12.0		12	12	12		12.0
12	12	12	12		12.0		12	12	12		12.0
13	11	11	12		11.3		12	11	12		11.7
14	12	12	12		12.0		12	12	11		11.7
15	12	12	12		12.0		12	12	12		12.0
16	12	12	11		11.7		12	12	12		12.0
17	12	12	12		12.0		12	12	12		12.0
18	12	10	9		10.3		12	12	12		12.0
19	11	12	10		11.0		12	12	12		12.0
Avg.	10.7	10.8	10.6		10.7		11.7	11.7	11.7		11.7

Figure 4.2

Individual average scores shown in figure 4.3 indicate how each child scored on tests one through three and tests four through six. Eight students' scores were consistently 100% throughout the testing while 10 students' scores increased during the second half of the study. One individual child's score dropped due to missing one word on test seven. This child scored 100% on all other tests given.

Figure 4.3

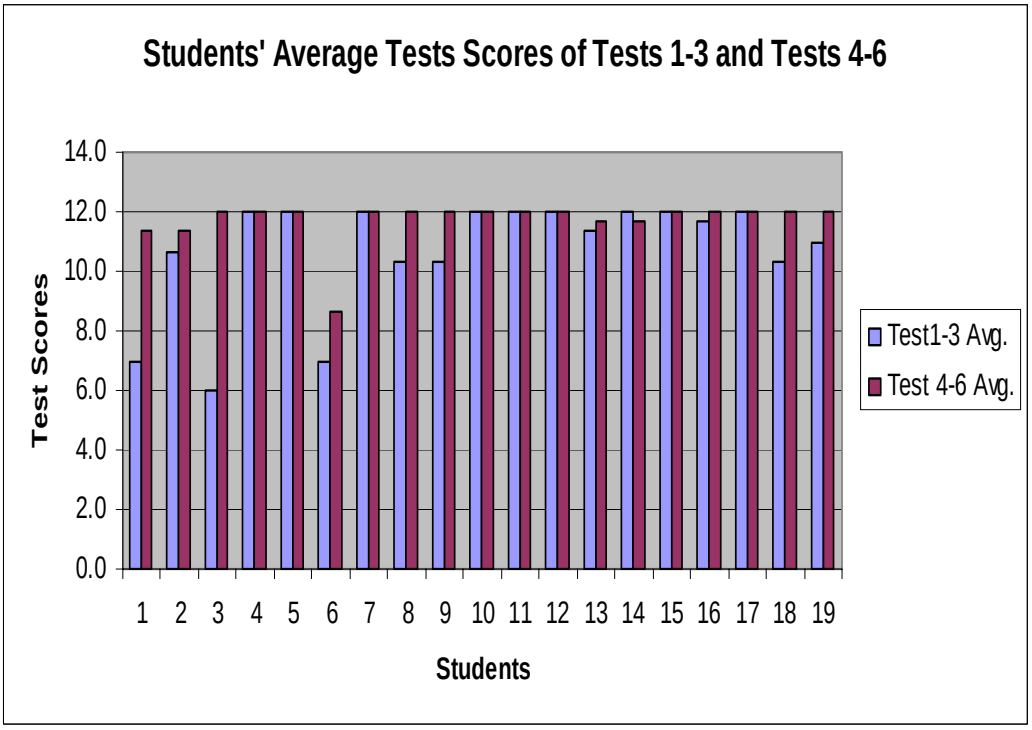
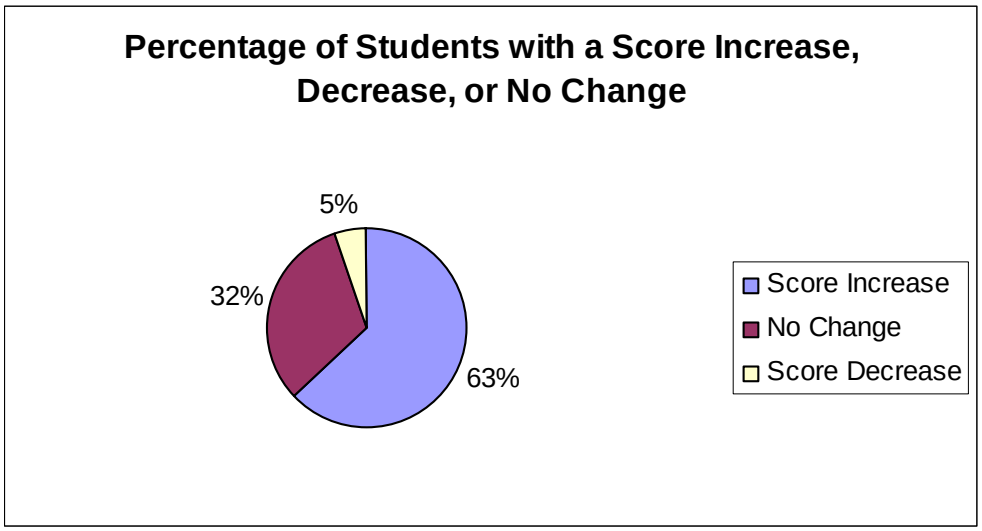


Figure 4.4 shows that 63% of the children taking part in this study increased their test scores after studying for their spelling tests in motivating ways. These students observed the greatest differences in their test scores throughout this study. There was a 5% decrease due to one child's score dropping one point after taking test number seven and 32% of the students' scores did not go in either direction due to receiving perfect scores on all tests given.

Figure 4.4



Discussion

The results of the study proved that preparing for spelling tests using motivational means will increase test scores. The students who showed the greatest growth were those who seemed to struggle the most with spelling tests. There was a group that did not show any growth due to scoring 100% at the beginning of the study. One student's score declined because of one lower test score during the second half of the study.

Some of the ways in which the students studied for the spelling tests were not as motivating as other ways. They all were interested in the chanting and cheering of the words and of the interactive games played on many given days. The study methods involving pencil and paper were not a favorite choice by students during this study. After completing the study, the tester feels the activities that motivated the students the greatest were the most beneficial. They all helped during the study, however; the children needed to remain as motivated as possible to ensure the highest amount of enthusiasm when studying.

Hypothesis Testing

The website http://www.physics.csbsju.edu/stats/t-test.html was used to test the hypothesis of this study. The t-test that was run was between the average test scores for tests one through three and four through six. Figure 4.5 shows the results of the t-test and the data collected during this study.

Figure 4.5

	Tests 1- 3	Tests 4-6
Mean (%)	10.7	11.7
Standard Deviation	1.92	.766
Hi/Low	12.0/6.00	12.0/8.70
Median (%)	11.7	12.0
Ave.Absolute Dev.-Median	1.27	.279
t-score	-2.12	-
sdev	1.46	-
Probability	0.041	-

The t-test used a risk level (called the alpha level) of 5 %. This is a standard level used in research as the criteria for rejecting the null hypothesis. This means that five times out of one hundred a statistically significant difference would be found between the means, even if there was none, by chance. If the probability is less than or equal to this significance level, the null hypothesis is rejected. This means the outcome is statistically significant. If the probability is greater than this significance level, the null hypothesis is not rejected. This means that the outcome is not statistically significant and the results could be by chance.

The degrees of freedom for this t-test were calculated by taking the total of the two groups, then subtracting two. The degree of freedom that was calculated and used was 36. A difference between the two means would be determined to be significant if the t-value was greater than or equal to 2.04. The calculated t-value for this study was 2.12. Therefore, the results of this study are statistically significant. Meaning, the increase in the average test scores after the use of motivational study skills was not due to chance.

CHAPTER V: SUMMARY AND CONCLUSIONS

Summary

The purpose of this study was to determine if studying in fun and entertaining ways for spelling tests could increase test scores in a second grade classroom. After completing the study, it is evident that the test scores did increase during the second half of the study. There were eight students that did not need to increase their test scores due to having perfect scores during the first half of the study. There was one student whose score did decrease by one point during the second half of the study. Ten of the students who took part in this study did show an increase in their test scores after time was spent studying for their weekly spelling tests.

Conclusions

The hypothesis of this study was that students' test scores will increase if time is spent studying in fun and exciting ways. The results from this study show that test scores will increase if time is put toward studying for a test. Some students' scores could not increase because their scores were already at the top of the grading scale, however; there were a significant number of students who observed a significant increase in their test results. There was only one individual student who did not see an increase on the seventh test. Other than this particular student, all children were able to see their scores increase after studying, or saw no increase due to no higher score available.

A portion of children's elementary school years is the time when the foundation is laid to help students learn how to develop good study skills and study

habits. There are many ways to assess students at this age level in all subject areas, however; few tests require time to study during the second grade year. Students were able to benefit from studying for the spelling tests and visually see their increased test results.

Recommendations

From the increase in multiple spelling test scores during the second half of the study, children were able to visually comprehend studying does influence a better score on a test. This grade level of students is not fully aware of the impact studying can have on their scores in school. The students that took part in this study were able to see the differences from the first half of the study to the second half of the study. Not only were the graphs showing the increase in test scores a positive aspect of the test, but the comments from students expressing enjoyment for studying were also held in high regard. Fifteen minutes of studying a day does make a difference, not only on graphs, but in the way students feel about studying for a test.

If this study is to take place again, it is recommended all students be tested over words that would be challenging for them. Several students who took part in this study were not challenged during the first part, therefore; were not allowed room to grow during the second part. They were also unable to feel the success of increasing their test scores.

In order to accomplish a study where all students are given room to grow, a challenge list would be provided for those students who are in need of a more difficult list of words. The same phonics lessons for each test would remain, though students would be studying for two separate tests. It would depend of the behaviors

of the students, but it seems it may work best if they study for all of the words together as they did in this study. When studying as a whole group, students recite and play games using all of the words. When studying individually or in small groups, students spend time studying for the words they would be tested over on Friday. The test would be given at the same time, however; the teacher would simply expect the students to understand they are to take the test over the words at their level. This list would be established for them during the pretest on Monday.

The other difference in a new study would be the timeframe for the study. It would increase from six weeks to ten weeks. The first five weeks of the study would be time when students would receive their words on Monday and tested on Friday. Again, several students would receive a challenge word list with the same phonics focus as the regular test. There would be no class time given to study during these five weeks. The second half of the study would be spent studying for the tests in motivational ways as a whole group or small or individual groups. The teacher would give the test of Fridays to all the children at the same time.

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Appendix A

Words Studied and Tested During Six Week Study

Week 1

Phonics Words

1. exam
2. exit
3. extra
4. next
5. expel
6. explode
7. expert
8. extinct

Priority Words

1. take
2. why
3. help

Challenge Word: experiment

Week 2

Phonics Words

1. piece
2. chief
3. cookie
4. briefcase
5. money
6. honey
7. monkey
8. turkey

Priority Words

1. put
2. different
3. away

Challenge Word: photograph

Week 3

Phonics Words

1. loaf
2. loaves
3. half
4. halves
5. shelf
6. shelves
7. knife
8. knives

Priority Words

1. again
2. off
3. went

Challenge Word: healthful

Week 4

Phonics Words

1. thumb
2. plumber
3. knock
4. knife
5. sign
6. gnaw
7. wrong
8. wrestle

Priority Words

1. also
2. around
3. another

Challenge Word: observation

Week 5

Phonics Words

1. touch
2. rough
3. young
4. cousin
5. enough
6. double
7 couple.
8. country

Priority Words

1. came
2. come
3. because

Challenge Word: rectangle

Week 6

Phonics Words

1. small
2. malt
3. sauce
4. haul
5. crawl
6. awful
7. cough
8. thought

Priority Words

1. same
2. right
3. think

Challenge Word: metamorphosis

Appendix B

Motivational Games Played to help Increase Spelling Test Scores

The Missing Word

The class reads the spelling list from the word wall containing this week's spelling words. They are asked to close their eyes as the teacher takes one of the spelling words off the wall. The students open their eyes and decide which word is no longer on the wall.

Riddles, Riddles, Riddles

The teacher explains to the class that a riddle is a puzzling question to a problem to be solved. If one of the spelling words is "cat," the teacher could say "what has three letters and rhymes with rat?" Depending of the age level, the difficulty level may be raised.

Say the Magic Word

The class is divided into two teams creating two single-file lines facing the front of the room. The goal of the game is to guess the word the teacher is slowly writing on the board. The first student to guess the word earns a team point and gets to finish spelling the rest of the word. The one who guesses aloud is the one in the front of the line. When their turn is over, they move to the back of the line. The member of the other team who did not say the word first also moves to the end of their line. The next pair of students guesses a different word and the children keep moving up until everyone has had a turn.

Alphabetize Me

Word cards with one spelling word on each card are randomly passed out to the students. Students arrange themselves in alphabetical order according to their word. The students then say and spell their word. The cards are collected, shuffled and passed back out a second time. Students who did not have a turn the first round alphabetize themselves according to their words.

Air Writing

Spelling words are drawn from the "spelling dish" one at a time. The teacher says the word and the children write the words in the air.

Mind Reader

The teacher picks a word from the "word dish" and gives clues to help the children guess which word was chosen. If the word is "where," the teacher might say "My word has two vowels in it. It begins with a 'w' and ends with an 'e.'" After a student guesses the correct word, the students write it on individual white boards or in spelling journals. This can be played until all words have been taken out of the "word dish" and all words have been practiced.

Guess the Covered Word

The teacher takes a spelling word down from the word wall or covers it up. The students guess which word is missing then write it on their individual white boards or in spelling journals. This can be played until all words have been used and practice writing each has taken place.

Chants and Cheers

The teacher explains to the class that “tall letters” go from the top line to the bottom line on paper such as the letter “d.” Letters that go from the bottom line half way to the top line are called “short letters” such as the letter “a.” Letters that are written anywhere below the bottom line are called “low letters” such as the letter “y.” When cheering or chanting letters to spell words, students put their arms in the air if the letter is “tall,” put their hands out in front of them if the letter is “short” and bend down to touch their toes if the letter is “low.”

In order to prepare for “Chant and Cheers,” all students stand up and get ready to move! The teacher chooses a word from the spelling list and asks the students to chant or cheer the letters to words in a certain voice four times. If the teacher gives the students the word “explain,” and to chant it in a “singing voice,” the students sing the letters while putting their arms out three times for ‘e,’ ‘x’ and ‘p,’ touch their toes for the letter ‘l’ and put their arms out in front of them again for the letters ‘a,’ ‘I’ and ‘n.’ If the teacher asks them to cheer the word “explain,” the students place their hand in the same places as when chanting, however they cheer them loudly as if cheering for a football game.

DO SPEEDSKINS™ INCREASE STUDENT TYPING SPEED AND ACCURACY?

by

CHRIS FERNHOLZ

B.S. MAYVILLE STATE UNIVERSITY, 2001

A capstone submitted to the Faculty of the Graduate School of Winona State University in partial fulfillment of the requirement for the degree of

Master of Science

Department of Education

Spring 2006

This capstone entitled:

DO SPEED SKINS™ INCREASE STUDENTS TYPING SPEED AND ACCURACY?

written by Chris J. Fernholz

has been approved for the Winona State University Department of Education by

_____	_____
John Pittenger	Carrie Miller
_____	_____
Dr. Thomas Sherman Faculty Advisor	Natasha Monsaas-Daly (Outside Resource)

The final copy of the capstone has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

I dedicate this capstone to my wife, Molly

and my sister Jessica.

Fernholz, Chris J (M.S., Education)

Do SpeedSkins™ increase students typing speed and accuracy?

Capstone directed by Dr. Thomas Sherman

Abstract

Keyboarding speed, efficiency and accuracy are lifelong skills necessary in an increasing amount of workplaces. Too many students are not typing with efficient speed, accuracy and are looking at their keys when they type, which decreases their typing efficiency. The purpose of the study was to help identify if using SpeedSkins™ increased students typing speed and accuracy.

The study was conducted over two separate nine week periods. Data was collected on the students typing speed and accuracy levels, known as gross words a minute (GWAM), pre and posttest. GWAM is calculated by taking the number of words typed correctly per minute and subtracting the number of mistakes. Students during the first nine week period spent 20 minutes a day three days a week taking a variety of one, three and five minute typing timings. Students in the second nine week period used the Speed Skins™, which covered their keys while taking the same timed timings.

Results from the timed timings indicated that all of the students gained typing fluency by increasing their GWAM throughout the quarter. The students that used the SpeedSkins™ showed nearly a two GWAM increase over the students that didn't use the SpeedSkins™.

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Chapter I

INTRODUCTION

Need for the Study

Keyboarding speed, accuracy and efficiency are lifelong skills necessary in a growing number of workplaces. With the increase of computer technology in our homes, schools, industries and everyday lives, effective touch-typing is an essential skill. Many students spend time outside of class typing while emailing and communicating in chat rooms and on instant messenger. For many this has increased their typing speed from memory or thought dramatically; while the ability to reproduce documents from a paper copy or excel at a typing test has not increased as much.

Statement of the Problem

Some students are not typing with efficient speed, accuracy, and are looking at their keys when they type, using the hunt-and-peak method which decreases their typing speed.

Purpose of the Study

The purpose of the study was to determine if using SpeedSkins™ would increase students typing levels more than the students who did not use them.

Statement of the Hypothesis

By using SpeedSkins™ 20 minutes a day three times a week, students in Computer Applications I will increase their typing speed and efficiency more than students who do not use the Speed Skins™

Definition of Terms

Gross Words a Minute: Abbreviated GWAM, Calculated by taking the number of words typed correctly per minute and subtracting the number of typing errors. Errors would include spelling, spacing, capitalization and punctuation.

Hunt-and-Peck: An inefficient method of keying which relies on visually locating the keys, and usually only employs one or two fingers and the thumb on each hand.

Instant Messenger: "Abbreviated IM, a type of communications service that enables you to create a kind of private chat room with another individual in order to communicate in real time over the Internet" (www.webopedia.com/TERM/I/instant_messaging.html)

Keyboard: A device for typing information at a typewriter-like instrument that includes alphabetic, numeric, and symbolic keys.

Keyboarding/Keying/Typing: These terms are used interchangeable to describe the activity of entering information into various types of equipment.

Micro Pace: South-Western Thomson Learning typing program that features timed and paced writings with a built in diagnostic tool that provides reports of students' progress.

SpeedSkins™: Thin plastic covers that fit over the letter and number keys. Their main purpose is to train students to keep their eyes on their paper or screen and not their hands, requiring students to concentrate on touch-typing skills.

Words Per Minute: Abbreviated WPM, number of words typed per minute.

Variables

Independent variables

The independent variable for this study was the use of the SpeedSkins™ while completing typing activities 20 minutes a day, three times a week throughout the quarter. Group A which was the control group did not use anything to cover their keyboards, Group B the experimental group used SpeedSkins™ to cover their keys.

Dependent variables

Gross Words a Minute (GWAM) typed by Computer Applications I students. Students GWAM is calculated by taking the number of words typed per minute and subtracting the number of typing errors.

Control variables

Students used the same timed timings and the Micro Pace typing program throughout the course of this study. The typing activities and order they were administered were consistent for both groups. They were in the same classroom using the same computer and keyboard for each timing.

Moderator variables

The moderator variables for this study included the time of day, students beginning typing speed and how much each student used a keyboard outside of class.

Limitations of the Study

The process of determining subjects for this study was limited to high school students enrolled in Computer Applications I. Students ranged in age from 14-18 (grades 9-12). Other limitations included the time of day, students beginning typing speed and how much each student used a keyboard outside of class. Many students

have access to and use a keyboard and computer outside of the classroom, while others do not.

This study was conducted over two nine week periods. Students typing speeds were tested the first day of the quarter to establish their beginning GWAM. The students participated in the same multiple typing activities three times a week, for 20 minutes a day throughout the quarter. The original group did not use anything to cover their hands so they could see the keyboard. The second group used SpeedSkins™, which covered the keys and didn't allow them to see them.

On the last day of the quarter they were again tested to find their final GWAM. Their beginning GWAM was subtracted from their final GWAM to determine if there was any improvement during the quarter.

Chapter II

LITERATURE REVIEW

According to the Computer Industry Almanac 61.8% of all U.S. households had a computer in the year 2003. Five years prior to that in 1998 the percentage was only 42.1%. Right now we are in the middle of the information technology era. "Personal computers are revolutionizing society. This revolution started in the late 1970's and continues to mushroom" (Computer Almanac, 1996). With the recent advances in computer technology the keyboard has become a vital tool in almost every aspect of life. Computers are almost everywhere in our society, from medical offices to department stores and the fast food industry, the computer has revolutionized our everyday lives.

Computer usage is on the rise in many aspects of our society including in our homes, personal lives, at schools and in the workforce. In the year 2004 the U.S. computer usage represented 27.22% of the total usage worldwide. Japan was second with 8.42% (Computer Industry Almanac, 2005). Many areas of our lives are being affected and enhanced by computer usage. Computers are being used to create presentations, spreadsheets, word process documents, surf the Internet, email and instant message one another.

"The keyboard is the key to the computer. The computer is the key to communication" (SpeedSkin, 2005). The computer has changed the way we communicate with one another. Past day communication such as letters and memos are being replaced by modern day emails and instant messaging. Because of this

change in technology efficient keyboarding skills are a necessity in our technological world.

In order to be proficient in keyboarding, students need to learn the following:

- Correct positioning including hands and arms
- Proper finger placement
- Proper key-striking/finger stretch techniques
- Ability to key without looking down at their fingers or keyboard

The sooner these skills are taught the less likely one is to fall into bad habits such as the hunt and peck method which is difficult to break.

The keyboard was first invented in the 1860's by C.L. Sholes, "who put together the prototypes of the first commercial typewriter in a Milwaukee machine shop" (Consider QWERTY, ND). The keyboard is "an arrangement of keys on a board that is attached to a typewriter, computer, or word processor" (Robinson, 1993). Originally the keys were arranged alphabetically in two rows; but a problem arose. "People became so adept at using the keyboard that the keys would stick or jam when struck in quick succession. In order to overcome this problem Sholes decided to make the job of typing as slow as he possibly could. His solution? He placed the most frequently used keys as far apart from each other as he could." (Pagewise, 2002) The modern day keyboard is referred to as the QWERTY keyboard because of the arraignment of letters on the left side of the top row.

"The first typing instruction was provided by typewriter manufacturers in about 1880" (Yamada, 1983). "It took public schools until 1915 to begin teaching typing as a high school occupational skill" (West, 1983). As typing was first being

introduced to schools many believed it would never replace the long hand cursive writing style. Wood and Freeman (1932) conducted a study in which they followed 2,383 students over a two year period as they learned to type on portable typewriters. They found that the students who used typewriters wrote with more expression, showed higher reading scores, became better spellers, and enjoyed writing more than students learning to write using conventional methods. Although keyboarding has been taught for many years using several different machines, the same "basic keyboarding skill consists of the fluent manipulation of the letter keys, the figure/symbol keys, and the basic service keys by touch without looking" (Robinson 1993). The less students have to rely on looking at their keys the more it will increase their typing fluency and efficiency.

Keyboarding is a psychomotor skill which must be learned. One who has mastered the touch method types with an increased fluency and accuracy rarely looking at their keys. The most inefficient method of keyboarding is known as the hunt-and-peck method in which the typist searches for individual letters with only a couple fingers. "Research states that people who use the hunt-and-peck method . . . develop their own style of inefficiency which becomes time consuming and costly" (Russin, 1995). Once a habit like this is formed it is more difficult to break, than if the proper technique had been learned from the beginning. One of the benefits of teaching elementary students to type is that "computers can greatly facilitate implementation of a process approach to teaching writing" (Graves, 1983). Therefore it is important that kids not only get exposed to the keyboard at a young age but that they are also taught the proper keying technique.

Much like reading, riding a bike or playing piano typing is a skill that needs consistent reinforcement in order to be effective. "Keyboarding skills improve little or abate without consistent reinforcement. Teachers at the grade level where keyboarding is introduced – and at all levels above, no matter what subject they teach – should be trained to provide reinforcement activities wherever computers or typewriters are used in the curriculum. Teaching students to keyboard and then failing to provide adequate reinforcement and application opportunities is somewhat like teaching students to read and then not providing books, opportunity, or motivation for them to read afterwards" (Boyce, 1992). A majority of students use computers outside of the classroom, which should be a reinforcement of their skills. It is important that the proper skills and techniques are taught and reinforced for them to be most effective.

With the use of SpeedSkins™ which are described as "the peek proof solution to keyboarding instruction" (SpeedSkin, 2005) students are unable to look at their keys and hunt for the proper letters. With their keys covered this should increase their memorization of the keyboard and eventually increase their typing speed and accuracy. It was observed that some students were frustrated and impatient with the SpeedSkins™ when they first started using them, but over time their comfort level increased and many looked forward to the challenge they presented.

SpeedSkins™ are opaque, thin plastic covers that fit over the letter and numbers keys. Their main purpose is to train the students to keep their eyes on the paper or screen and not on their fingers. It requires students to concentrate on their

touch-typing skills. More information about SpeedSkins™ is available at www.speedskins.com

"Proficiency with touch keyboarding continues to be an essential workplace skill and employment requirement" (British Columbia Ministry of Education, 1998). Many employers now require job applicants to take and pass a typing test, in which they must accurately type at a certain speed, for a specified period of time, before they consider offering them the position. In order to prepare students for the real world they need to be efficient touch typists not relying on the hunt-and-peck mode.

Chapter III

METHODS AND PROCEDURES

Overview

This study examined the effect SpeedSkins™ had on the typing speed and accuracy of high school students' grades 9-12. 53 students participated in the study by taking a beginning-typing test the first day of the quarter and then calculated their beginning GWAM. The first class had 26 students and did not use anything to cover their keyboards. The second class with 27 students used SpeedSkins™ that covered their keyboard. All 53 students participated in a final test that was used to calculate their improvement over the quarter.

Research Design

This study was an experiment that looked at the effects of the independent variable, the use of SpeedSkins™, on students' three minute typing speed and accuracy known as GWAM. On the first day of the quarter students took a typing test to establish their beginning GWAM. All 53 students participated in the same multiple typing activities three times a week, for 20 minutes a day throughout the quarter. The first class with 26 students was the control group and did not use anything to cover the keys on the keyboard when they were completing their activities. The second class with 27 students was the experimental group and used SpeedSkins™ that covered their keyboard so they were unable to look down and see their keys. On the last day of the quarter the students took the same First/Last Day typing test that they took the first day of the quarter. This test established their final GWAM. In order to calculate the students GWAM their number of mistakes was subtracted from their

words per minute (WPM). For example if a student typed 44 words per minute with three errors their GWAM would be 41. Errors would include spelling, spacing, capitalization and punctuation.

Subjects

The participants in this study included 53 students in grades 9-12 enrolled in Computer Applications I. There were 18 freshman, 24 sophomores, five juniors, and six seniors. The small town community in which this school is located is predominantly middle class and Caucasian. The ethnic makeup of the class was also predominantly Caucasian. One of the students had a Hispanic background, but did not qualify for ESL assistance. Three of the students received special education services. The control group (Group A) completed the class in the spring of the 2003-2004 school year. The experimental group (Group B) completed the class in the fall of the 2004-2005 school year.

Instruments

Students' typing speed was assessed five times throughout the quarter with material the students had not previously seen. Examples of the typing timings are in the available in the appendix. On the first and last days of the quarter students completed the same First/Last Day typing test, the other three timings were of similar format but different material.

Using the Micro Pace typing program, students took three three-minute timed timings and their best of the three scores was recorded. The program labeled and recorded each error throughout the timing; it then calculated their GWAM by taking their number of words keyed per minute minus the number of errors. The second tool

used in this study was the SpeedSkins™. SpeedSkins™ are orange covers that fit over the keyboard so students are unable to see their keys. The SpeedSkins™ were used during drill work with the Group B, but not during testing.

The students were in the same classroom and used the same computers and keyboards for each typing test. The scores from both groups will be compared to determine if the SpeedSkins™ were successful in increasing student-typing levels.

Validity of Measures

Utilizing the same typing program, tests and activities preserved the validity of the study. Individual student differences in typing ability and the amount they used a keyboard outside of class could not be standardized.

Procedures

Using the Micro Pace typing program high school student's grades 9-12 in Computer Applications I took three typing tests at the beginning of the quarter, their best test was used to determine their beginning GWAM. The test consisted of three three-minute timings in which the students typed as much of a timed writing as they could. The Micro Pace program calculated their GWAM by taking their number of words keyed per minute minus the number of errors.

Throughout the quarter the students participated in multiple typing activities three times a week, for 20 minutes a day. Typing activities included one, three, and five-minute timings and also: 10,: 20,: 30 second sprint timings. The activities and order they were administered were consistent for both sets of students.

Group A completed the activities without anything covering their keys, which allowed them to look down at the keys on the keyboard. Group B used SpeedSkins™ on their keyboard that didn't allow them to see their keys.

At the end of the nine week quarter the students were once again tested to find their ending GWAM. The same test that was administered the first day of the quarter was once again given the last day of the quarter. The students beginning GWAM was subtracted from their ending GWAM to see if an improvement had been made. The two sets of scores were then compared with each other to see if the SpeedSkins™ were successful in increasing students GWAM.

Conclusion

This study measured the effect of covering students' keys had on their typing GWAM. While the results showed that all of the students increased their GWAM, the students who used the SpeedSkins™ increased their GWAM by and average of 1.9 GWAM more than those who didn't have anything covering their keys.

Chapter IV

RESULTS AND DISCUSSION

Introduction

The conclusions of this study have been drawn based on data collected from two sets of students enrolled in Computer Applications I. In order to understand if SpeedSkins™ increased student typing GWAM, a study was conducted to see the improvement of two separate classes.

Procedure

This study was conducted over two nine week periods. Students typing speed were tested the first day of the quarter to establish their beginning GWAM. The students participated in the same multiple typing activities three times a week, for 20 minutes a day throughout the quarter. The control group did not use anything to cover their keys, so they could see the keyboard. The experimental group used SpeedSkins™, which covered the keyboard and didn't allow them to see their keys.

On the last day of the quarter they were again tested to find their final GWAM. Their beginning GWAM was subtracted from their final GWAM to determine if there was any improvement during the quarter.

Variable

The independent variable for this study was the use of the SpeedSkins™ that the experimental group used to cover their keys while completing their typing activities. The moderator variable that may have effected this study was the amount each individual student used a keyboard outside of class.

Hypothesis Testing

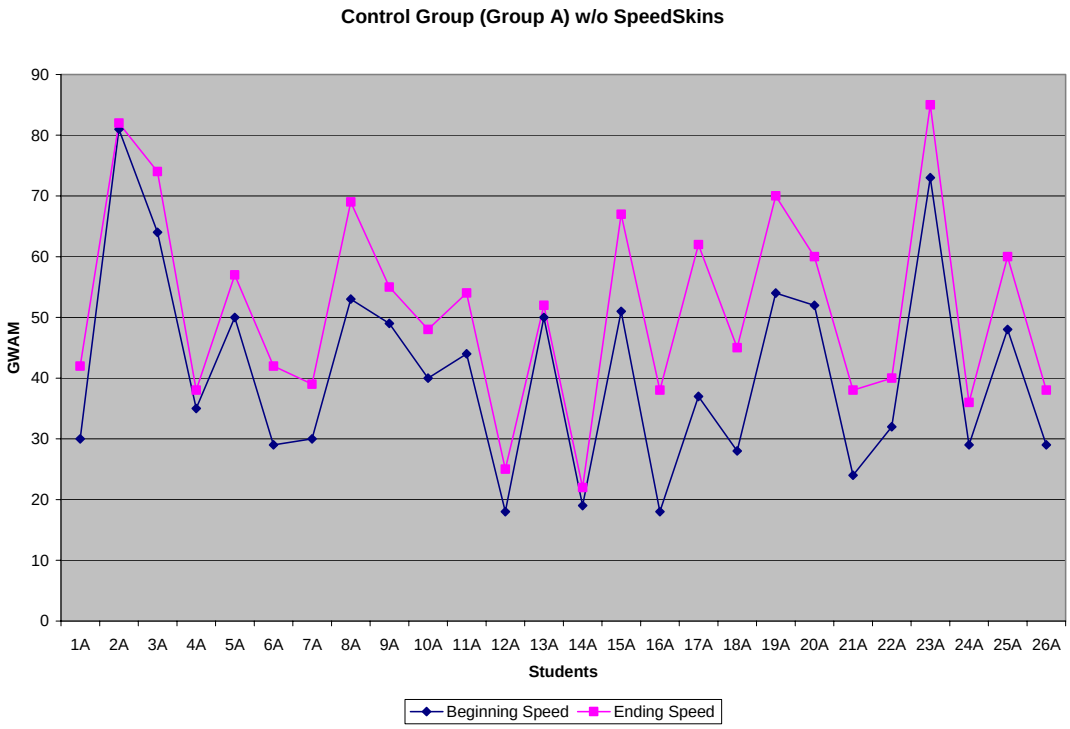
The hypothesis for this study was that students using the SpeedSkins™ would increase their typing GWAM more than the student who didn't use the SpeedSkins™. The hypothesis was tested by comparing the students beginning GWAM, the first day of the quarter, with their ending GWAM, the last day of the quarter. The results of these tests were recorded and compared to show how much if any improvement the student's made.

Testing of the control group (Group A) took place in the spring of the 2004. Testing of the experimental group (Group B) took place in the fall of 2005. The difference in typing ability was then calculated and compared at the end of the study.

Results

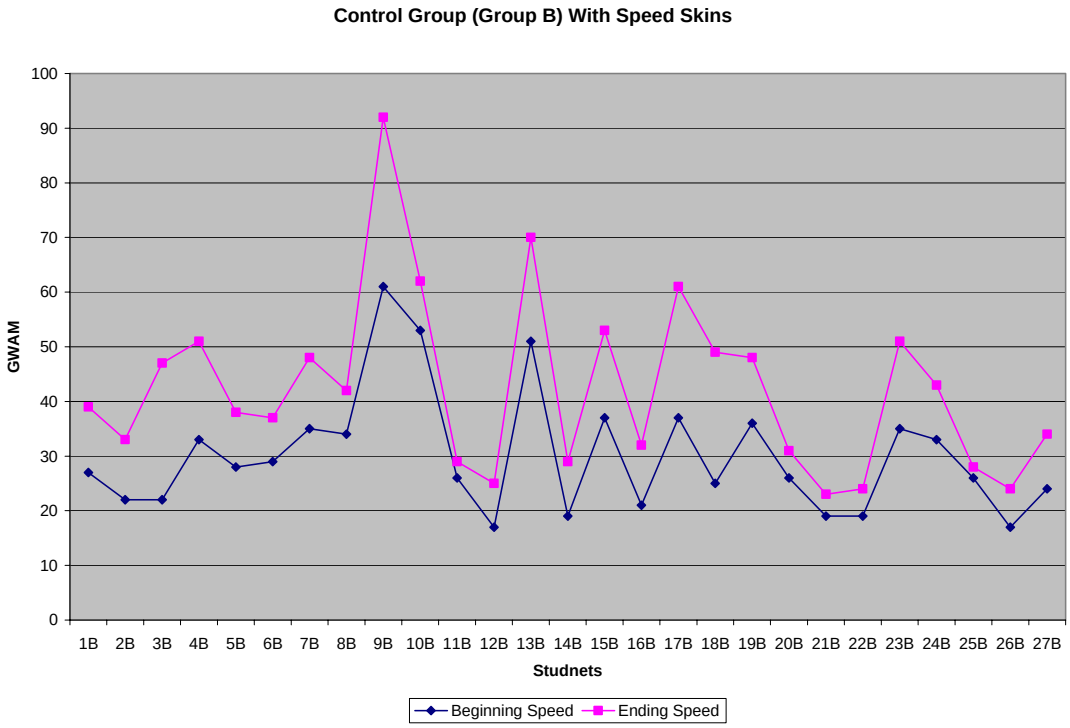
The results from this study showed that both classes improved their typing GWAM throughout the course. The amount of success and growth varied as would be expected considering the varied ability levels and beginning typing speed. The experimental group (Group B) that used the SpeedSkins™ showed an improvement of nearly 1.9 GWAM per student more than the control group (Group A). Examples of typing tests can be found in the Appendix. The First/Last Day sheet was the test used to measure their GWAM on the first day of the quarter and also the last.

The control group (Group A) which did not use the SpeedSkins™ had an average increase of 10.4 GWAM per student. The highest increase was by student 17A who had an increase of 25 GWAM, while student 2A only have a one GWAM increase. While the amount of improvement varied throughout the class, every student showed some level of increase.



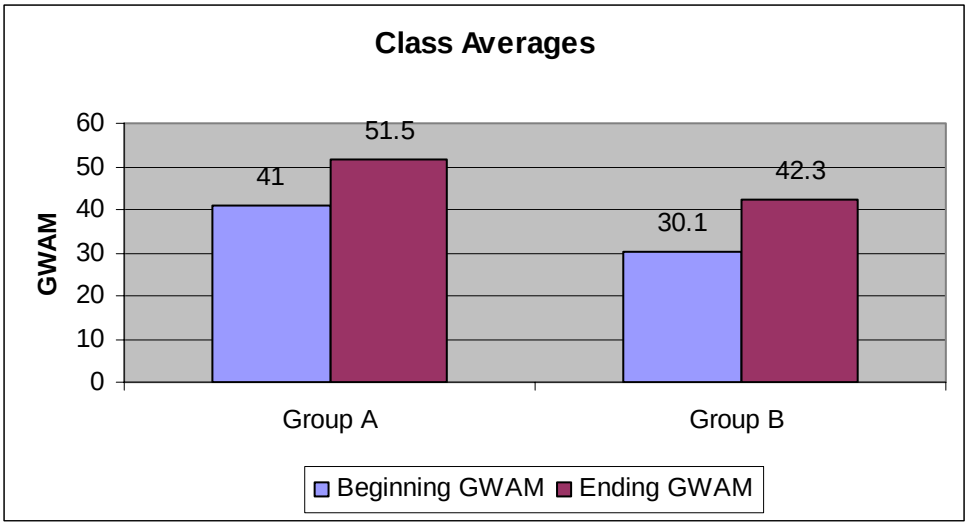
More detailed results can be found in Appendix A.

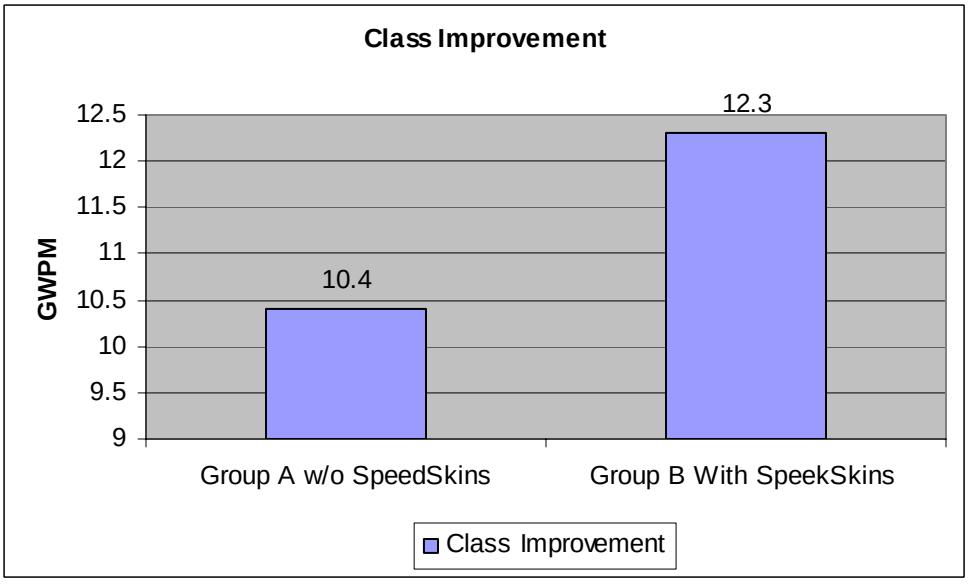
The experimental group (Group B) which used the SpeedSkins™ showed an average increase of 12.3 GWAM per student. The highest increase was by student 9B who had an increase of 31 GWAM, while student 25B only had a two GWAM increase. Once again the amount of improvement varied throughout the class while everyone showed a positive increase.



More detailed results can be found in Appendix B.

Both groups showed a significant improvement in their GWAM throughout the quarter. The experimental group (Group B) which used the SpeedSkins™ increased by an average of 1.9 GWAM more per student than the control group (Group A) which did not use the SpeedSkins™. The control group began the quarter typing an average of 10.9 GWAM more than the experimental group, although the experimental group's GWAM increased more over the course of the quarter the control group was still typing with a higher average GWAM.





The t-test calculates whether or not there is a significant difference between the means of two sets of data. The mean improvement for the control group (Group A) was 10.4 GWAM, while the experimental group (Group B) was 12.3 GWAM. A t-test analysis of the data showed that the t-value was 1.02 with 51 degrees of freedom. A t-value of 1.02 does not show a significant difference. There are many other factors involved in student performance including time of day, computer usage outside of class, class size and countless individual factors.

Chapter V

SUMMARY AND CONCLUSION

Introduction

In this study, SpeedSkins were used to determine if they help increase students typing speed and accuracy known as GWAM. The study was conducted over two separate nine week periods. Student initial GWAM was tested the first day of each quarter and their final GWAM was tested the last day. These numbers where then compared to calculate their quarter improvement. Throughout the course of the quarter both groups of students participated in a variety of one, three and five minute typing activities, for 20 minutes a day, three days a week. During these activities the experimental group (Group B) used SpeedSkins™ which covered their keyboards and didn't allow them to see the keys, while the control group (Group A) did not.

A factor that may have influenced the results of this study was student interest. Many of the students who used the SpeedSkins™ seemed to take it as a challenge to get better while others displayed a poor attitude and complained about using them.

Conclusion

In conclusion, the tester believed that the use of SpeedSkins™ would increase student's typing GWAM in the experimental group more than those in the control group. As the results show the students in Group B increased their GWAM by an average of 1.9 GWAM per student more than the students in the control group. This researcher would recommend the use of SpeedSkins™ to anyone who is trying to increase their typing speed and accuracy.

Recommendations

The researcher would make the following recommendations if further research were to be conducted: (1) the two sample groups should include only students in the same grade level. (2) The sample size should be increased. (3) The two sample groups should include students with closer beginning typing speeds. (4) Continue with a follow-up of both groups as they move on throughout high school.

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Appendix A

Computer Applications
Typing Results
Control Group
(Group A)

2004 – Spring Semester Timings, **No SpeedSkins™**

Student ID	Grade	Name	First Day	Last Day	Improvement
1A	10	Amanda A.	30	42	12
2A	12	Jesse A.	81	82	1
3A	11	Nicole B.	64	74	10
4A	11	Amanda B.	35	38	3
5A	9	Brittany B.	50	57	7
6A	9	Ben B.	29	42	13
7A	9	Tim B.	30	39	9
8A	9	Amy E.	53	69	16
9A	9	Anna E.	49	55	6
10A	10	Erin G.	40	48	8
11A	10	Lindsey G.	44	54	10
12A	11	Eric G.	18	25	7
13A	10	Shay J.	50	52	2
14A	9	Jayne K.	19	22	3
15A	10	Natalie L.	51	67	16
16A	10	Alicia L.	18	38	20
17A	9	Elizabeth O.	37	62	25
18A	9	Hilary P.	28	45	17
19A	9	Emily R.	54	70	16
20A	9	Anna S.	52	60	8
21A	10	Andrew S.	24	38	14
22A	10	Ashley S.	32	40	8
23A	9	Meghan S.	73	85	12
24A	9	Patrick S.	29	36	7
25A	9	Christy T.	48	60	12
26A	10	Jennifer V.	29	38	9
		Class Average	**41.0**	**51.5**	**10.4**
		Min	**18**	**22**	**1**
		Max	**81**	**85**	**25**

Appendix B

Computer Applications
Typing Results
Experimental Group
(Group B)

2004 – Spring Semester Timings, **With SpeedSkins™**

Student ID	Grade	Name	First Day	Last Day	Improvement
1B	9	Ben A.	27	39	12
2B	10	Joseph A.	22	33	11
3B	10	Destiny B.	22	47	25
4B	10	Eric F.	33	51	18
5B	11	Elaine F.	28	38	10
6B	10	Matt F.	29	37	8
7B	10	Spencer G.	35	48	13
8B	10	Crystal H.	34	42	8
9B	10	Ashley H.	61	92	31
10B	12	Michelle H.	53	62	9
11B	10	Brandon K.	26	29	3
12B	9	Matt K.	17	25	8
13B	10	Carly L.	51	70	19
14B	12	Blair L.	19	29	10
15B	9	Melinda M.	37	53	16
16B	9	Jon N.	21	32	11
17B	10	Jamie N.	37	61	24
18B	10	Ben O.	25	49	24
19B	9	Kayla P.	36	48	12
20B	12	Bethany S.	26	31	5
21B	11	Kayla S.	19	23	4
22B	10	Dylan S.	19	24	5
23B	10	Gavin S.	35	51	16
24B	10	Angela T.	33	43	10
25B	12	Kim V.	26	28	2
26B	10	Michael V.	17.	24	7
27B	10	Jeremy W.	24	34	10
		Class Average	**30.1**	**42.3**	**12.3**
		Min	**17**	**23**	**2**
		Max	**61**	**92**	**31**

Appendix C

Directions: Type as much of following two paragraphs as you can, if you finish the second one before the time is up, press enter and begin typing the first one again. Your timing will last 3 minutes, the timer on your typing program will start as soon as you press the first key. You will take this timing three times and your best score will be recorded.

First/Last Day

What is it that makes one person succeed and another fail when the two seem to have about equal ability? Some have said that the difference is in the degree of motivation and effort each brings to the job. Others have said that an intent to become excellent is the main difference.

At least four items are likely to have a major effect on our success: basic ability, a desire to excel, an aim to succeed, and zestful effort. If any one of these is absent or at a low point, our chances for success are lessened. These features, however, can be developed if we wish.

REPEATED ORAL READING AND THE EFFECTS ON READING FLUENCY OF FIRST GRADE STUDENTS

by

MOLLY FERNHOLZ

B.A. Winona University, 2003

A capstone submitted to the

Faculty of the Graduate School of Winona State University

in partial fulfillment of the requirement for the degree of

Master of Science

Department of Education

April 2006

This capstone entitled:

Repeated Oral Reading and the Effects on Reading Fluency of First Grade Students

written by Molly Fernholz

has been approved for the Winona State University Department of Education by

Craig Erickson	Becky Breeser
Ben Volker	Jackie Walter (Outside Resource)
Dr. Thomas Sherman Faculty Advisor	Date

The final copy of this capstone has been examined by the signatories, and we find that both the content and form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

Fernholz, Molly (M.S., Education)

Repeated Oral Reading and the Effects on Reading Fluency of First Grade Students

Capstone directed by Dr. Thomas Sherman

Abstract

Helping children develop fluency in reading words will help them to become successful readers. This study examined the effects of repeated oral reading on reading fluency of first grade students.

A class of fifteen first grade students participated in fluency assessments throughout the year. The class was divided into two groups. One of the groups was given additional opportunities to read a text. After a text was introduced to the class, modeled by the teacher, and read together in small and large groups several times, a group of students then read the text three times to an adult. Fluency assessments were given approximately twice a month to determine how many words students read correctly per minute and to establish students' reading accuracy.

Students that read each text aloud three times to an adult showed more progress on the reading fluency assessments than students that had not had as many opportunities to read the text; however their scores did not succeed the group with less reading opportunities.

Repeated reading helped to increase students' fluency scores, however, it was time consuming and required adult volunteers to listen and interact individually with the students. This practice should be considered when implementing and evaluating strategies in the classroom for the struggling reader.

ACKNOWLEDGEMENTS

I would like to thank my husband, Chris,

and my advisory group for their

encouragement, support, and help

with this capstone project.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

Need for the Study

Fluency provides a bridge between word recognition and comprehension. Readers, who are more fluent, concentrate less on decoding words and more time comprehending what they are reading. These readers can easily make connections between what they are reading and their own prior knowledge. Less fluent readers have to spend more time decoding words, leaving limited time for understanding of the text. Their reading often results in broken up words and choppy sentences. Fluency assessments are a popular and efficient way to determine a students reading speed. Fluency was identified as an important component of reading instruction by the National Reading Panel Report (2000), which assessed research-based reading instruction and the effectiveness of teaching approaches. Research also shows that children increase their fluency when they read and reread the same text aloud several times (Callella, 2003). With an increase of reading practices and instruction within the classroom, first grade students will increase their reading fluency.

Statement of the Problem

Reading instruction is the primary goal of first grade, therefore students practice recognizing and decoding words on a daily basis. Often much time is spent on these skills and fluency is less practiced and assessed. Some students are not reading at a successful reading rate for the first grade level. Students at the age of 6 should be reading 50-60 words per minute and students at the age of 7, should be reading 60-70 words per minute (Foresman, 2000). It is necessary to practice fluency

strategies in the classroom during whole group instruction time and model to students how they can improve their fluency when reading independently or in a small group. Students become more proficient readers when they have the opportunities to read aloud and be read to. Students must first hear and understand what fluent reading sounds like (Blau, 2005). Students taught effective reading strategies will be more likely to apply them during independent reading practices.

Purpose of the Study

The purpose of this study was to increase student reading fluency by allowing additional oral reading opportunities. Specifically, it examined if reading aloud to a competent reader resulted in a higher reading fluency score than if students read independently.

Statement of Hypothesis

Reading fluency scores will increase more for first grade students who participated in repeated readings, compared to those who had fewer opportunities to engage in reading a text multiple times. Fluency scores include words read correctly per minute.

Definition of Terms

Fluency: The speed and accuracy with which one reads.

Accuracy: The number or percentage of words read correctly.

Words correct per minute:	The total number of words read per minute minus the incorrect words.
Fluent Reader:	One who reads and understands what he or she is reading quickly and with minimum effort.
Developing Reader:	One who cannot yet read and understand quickly and easily what he or she is reading.

Variables

In this study, the independent variable was the repeated oral reading done by the students with an adult volunteer. The control group did not experience the repeated oral readings. Additional time spent for the control group was done independently. The dependent variable consists of the number of words read per minute (fluency scores) by the first grade students. The control variables include the students in the same classroom with the same teacher and students engaging in equal reading instruction, with the exception of the repeated oral readings. The moderator variables that may have affected the outcome of the study include variation of adult volunteers, the time of day which the fluency assessments were done and parental involvement in students reading practice.

Limitations and Delimitations of the Study

In this classroom study, fluency scores of students in the repeated oral reading group (experimental) were compared to those who did not receive additional reading opportunities at school. Both groups were created to be heterogeneous, with various

skills and reading abilities to ensure comparable results. However, it is without control, students' academic needs, background, and parental involvement that may hinder or facilitate a students reading fluency, which may impact the results of this study. Due to small class size, eight students made up the experimental group. The groups represented a very small portion of first grade students, therefore the results may not generalize to all first graders.

CHAPTER II: REVIEW OF RELATED LITERATURE

Reading fluency is a critical component of successful reading and comprehension, but has not one single definition. Reading fluency is the speed and accuracy with which one reads (Bowman, 2004). In comparison to music, Worthy and Broaddus (2001) states fluency consists not only of rate, accuracy and automaticity, but also of phrasing, smoothness and expressiveness. Fluency is important because it provides a bridge between word recognition and comprehension. Fluency makes reading sound effortless. It doesn't happen immediately for young readers, but develops gradually over time and with substantial practice.

According to a panel of reading experts assembled by the National Center for Education and the Economy (1999), fluency is defined as the ability to read aloud with appropriate intonations and pauses indicating that students understand the meaning, with only an occasional stop to figure out words or sentence structure. This definition highlights the relationship between reading and comprehension.

Reading fluency promotes the development of many important reading skills including accuracy, speed, and comprehension.

Automaticity Theory and Fluency

Automaticity and fluency are often used interchangeably. Automaticity explains how fluency is developed. Samuels, Schermer, and Reinking (1992), state there are three components of the reading process that explain the development of fluency: decoding, comprehension, and attention. Beginning readers focus much attention on decoding words or word parts, where as more fluent readers are able to

focus on the whole word part, making reading easier and faster. Automaticity is based on the principal that tasks become easier, requiring less attention, through practice. In regards to reading, it is decoding that becomes automatic through practice; comprehension always requires considerable attention, especially if the concepts are unfamiliar. Comprehension and decoding can occur at the same time for a fluent reader (Samuels et al., 1992).

Fluency Strategies

There are many ways to help promote reading fluency in the classroom and motivate readers. It is essential to do so because of the importance that fluency has in reading comprehension. Activities for repeated oral reading can be practiced during student-adult reading, choral and echo reading, tape-assisted reading, partner reading, and reader's theatre (Prescott-Griffin and Witherell, 2004) have all been researched to help build fluency.

In order to read fluently, students must first hear and understand what fluent reading sounds like (Blau, 2005). With good models of fluent reading, students will develop an awareness of the importance of fluent reading (Rasinski and Padack, 2001). In the primary grades, modeling fluency is often done with a big book. A big book is an enlarged version of commercially published book. It is big enough for all students to clearly see the text. By pointing with a finger as the teacher reads the story, students can visually see when and how the teacher pauses, as well as when their voice changes. Daily models of fluent reading include: reading aloud, shared reading, commercial reading programs, books on tape, and computer books. A

repeated reading is a common strategy used in the classroom. All models are useful ways that can be easily implemented in any classroom to help achieve fluency. Twenty minutes of fluency instruction daily in or by the second semester is sufficient for most first grade students (Vaughn and Linan-Thompson, 2004).

Repeated Readings

Rereading is practiced in the classroom to achieve fluency. It also helps to correct miscues, clear up misconceptions and gain a deeper understanding. Rereading to practice fluency will eventually increase comprehension (Samuels, 1997). By practicing repeated readings, it ensures students have familiarity with the vocabulary and use proper expression. Repeated reading as a fluency building strategy was identified in the late seventies by researchers, Jay Samuels and Carol Chomsky. They both saw evidence that readers recognized more words on sight with repeated readings (Samuels, 1997; Blau, 2005). Repetition builds familiarity and automatic recognition with the words in a given passage. The words learned are also recognized in other material. When rereading for fluency, a focus on accuracy, speed, and comprehension is needed. According to Samuels, Schermer, and Reinking (1992) exposure to repeated readings and time to practice with easy reading materials will help students to become automatic at decoding and be better readers.

Samuel's approach to repeated reading, timed and recorded, emphasized speed over accuracy. According to Samuels, when accuracy is emphasized the reader may become reluctant, losing motivation and becoming apprehensive about making mistakes.

When giving a timed rereading, it shouldn't be used with the whole class. Repeated readings should not be practiced with students who are already reading fluently, but only those whose reading is being hindered because they read too slowly. The faster we read, the easier it is to read because we can hold in our memory all we've read so far, and then use that information to guess what is to come (Fox, 2001). Being able to increase a reading speed is only beneficial if the reader can still comprehend what is being read. Passages that are used for rereading should be relatively short, 50-200 words, depending on age (Armbruster, 2001).

Assessing Reading Fluency

Formal and informal assessments should be taken regularly to ensure students are making appropriate progress with fluency. The most informal assessment is listening to students read aloud and making judgment about their progress in fluency (Armbruster, 2001). More formal assessments like recording words read correctly per minute when a student reads helps to measure the progress of fluency. Monitoring students' progress in reading fluency will help determine the effectiveness of teacher instruction and instructional goals. Graphing students' timings are motivating because it makes progress evident to the students (Callella, 2003).

Oral and Silent Reading

The primary purpose of oral reading is to communicate to an audience. When one is reading silently there is no audience. When reading orally, it is important to

put expression in the voice because of the need to sound as though you are speaking normally. Oral reading builds confidence, creates community, strengthens decoding skills, creates an enjoyable experience, and provides practice for many daily activities such as speeches, singing songs, telling jokes, and giving announcements (Rasinski, 2003). It is easiest to assess students reading progress by listening to students read orally. However, as students read more and become more fluent, the need for silent or independent reading becomes relevant.

Silent reading is becoming more popular in the classroom. It allows more opportunities for students to read and focus their attention to the meaning of the text rather than the oral production of it. Sustained Silent Reading (SSR) gives children daily opportunities to read and discover the enjoyments of reading. Three rules proposed in classrooms for SSR include: everybody reads, no interruptions, and no one will be asked to report on what they read. It is essential that students recognize SSR is a period of free reading, with the emphasis on reading for enjoyment. Students read high interest books silently and independently.

This classroom study investigated the effects oral reading and independent reading has on fluency progress. Much progress was made by students who were given oral repeated reading opportunities during the course of this study. Oral reading practices help to increase reading fluency more than silent reading practices. It seems to be an appropriate technique to employ in the classroom.

CHAPTER III: METHODS AND PROCEDURES

Overview

This study examined the effects repeated oral reading has on reading fluency of first grade students. All 15 students participated in whole group reading instruction, with additional reading opportunities that followed. The class was split into two groups. The experimental group read aloud a given text multiple times with an adult throughout the course of a week. The text was then sent home to be reviewed, practiced and returned to school. The control group read the assigned text independently, following the reading instructional time. These students also practiced the story at home after reading it in the classroom independently. Fluency assessments were given approximately once a month. The text read for the fluency assessment was a text practiced earlier that month. The fluency assessment measured how many correct words were read per minute from each student.

Research Design

This study looked at the effects of the independent variable, the repeated reading on fluency scores. The fluency scores of the experimental group (Group A) were compared to the fluency scores of the control group (Group B). Group A students read a given text three times with an adult and then were assigned to read independently and aloud to parents as homework. The other students, Group B, read the text aloud once in small groups or pairs, and then independently in the classroom and at home for homework. All students read the same text each week. Number of words read correctly was assessed during this study.

Subjects

The make up of this class included 15 first grade students ages six and seven years old. The ethnic make up of the class was predominately Caucasian, with one student of Mexican origin. The class was divided into two heterogeneous groups. Each group contained boys and girls, with a variety of skill levels. None of the students in this survey received special education services. Five students received Title 1 services for reading, meaning these students participated in one 30 minute session daily on reading phonics with a paraprofessional. Students were grouped based upon Kindergarten end of the year assessments, and initial assessments on phonemic awareness, high frequency word recognition, and teacher impressions of student reading ability.

Instruments

Student reading fluency scores were measured approximately once a month on the repeated reading graph (Appendix A) with material students had previously practiced. The reading material came from the Scott Foresman Reading Series (Foresman, 2000) used by all first grade students in the district. Only the correct words read per minute were assessed. Students from both the experimental and control groups read the same text.

Validity and Reliability Measures

The internal validity of this study was strong because the only difference in reading instruction that the two groups received was the number of oral repeated

readings that students did with a parent volunteer. Individual student reading abilities differed and how much parental involvement students received at home were not able to be measured; however, the students received instruction from the same teacher in the same classroom. It was difficult to measure the external validity because the results from this group of students may not generalize to other students. It may not be applicable to compare the results of this group of students to other students in other classes and schools. In order to determine external validity, the study needs to be replicated with other students and classes. The reliability measures used include having the same person (paraprofessional) conduct all fluency assessments. The procedure was followed consistently with that of the procedures in Appendix A and charted on the repeated reading chart, Appendix B.

Procedures

All students participated in whole group reading instruction and additional reading experiences with each text assessed for fluency. The text included mostly fiction stories. All stories were modeled by a competent reader, discussed, and read together by the group multiple times. The control group (Group B) read the text again with a partner and then independently. The story later was sent home for additional practice with a parent. The experimental group (Group A) read the text three times to a parent volunteer or to the teacher before taking the text home for practice. After stories were read at home, a parent signature was required before returning to school. The fluency assessment was given a couple of weeks later. When student, from Group A, read the text to a volunteer parent, a check mark was

given next to their name on an assignment sheet to keep track of reading opportunities from each text. All readings were practiced in the morning before lunch and students waited to be called out by the parent volunteer to read. The reading took place outside of the classroom in the hallway. Most days contained little to no interruptions or noise. Parent volunteers varied each week, so not the same parent listened to students read each time. Other than students in Group A practicing an oral reading three additional times, students had no differences in their reading instruction.

Fluency assessments were administered once a month by a paraprofessional. Stories read were selected for fluency assessments by the teacher. The material used for assessing came directly from the Scott Foresman Reading Series, stories the students had previous experience reading and were very familiar with. Only correct words per minute were assessed, with first and final month scores graphed. A total of six fluency assessments were administered in the five-month-duration of the study.

Conclusion

This study measured the effects of repeated reading on the reading fluency of students by comparing two groups of first grade students. All students participated in the same reading instruction, with one group reading the text three additional times orally before their fluency was assessed. The other group was given opportunities to read the text independently. The fluency scores were assessed by words read correctly, with first and final scores graphed to measure student progress.

CHAPTER IV: RESULTS AND DISCUSSION

The purpose of this study was to determine the effects of repeated oral reading on the reading fluency of first grade students. Fluency was simply calculated by counting the number of words read correct per minute in a given text. The first month fluency score is compared to the final month score.

Words Read Correctly

During the seven months of the study, six fluency assessments were administered. All students, except for one, showed an increase in words read correctly per minute. By using the first month score compared to the final month score, progress was shown among all students in both groups. The mean score for the experimental group (Group A) was 30.1 words increased with a standard deviation of 16.0. The median score of this group was 24.5. The mean score for the control group (Group B) was 25.3 words increased with a standard deviation of 18.2. The median score for this group was 24.0. Table 4.1 shows the mean, standard deviation and median values for each group. Figures 4.1 and 4.2 shows each students' first month score compared to their final month score by group.

Table 4.1

Increase of Words Read Correctly Per Minute

	Group A	Group B
Change in Mean	30.1	25.3
Change in Standard Deviation	16.0	18.2
Change in Median	24.5	24.0

Figure 4.1 Experimental Group

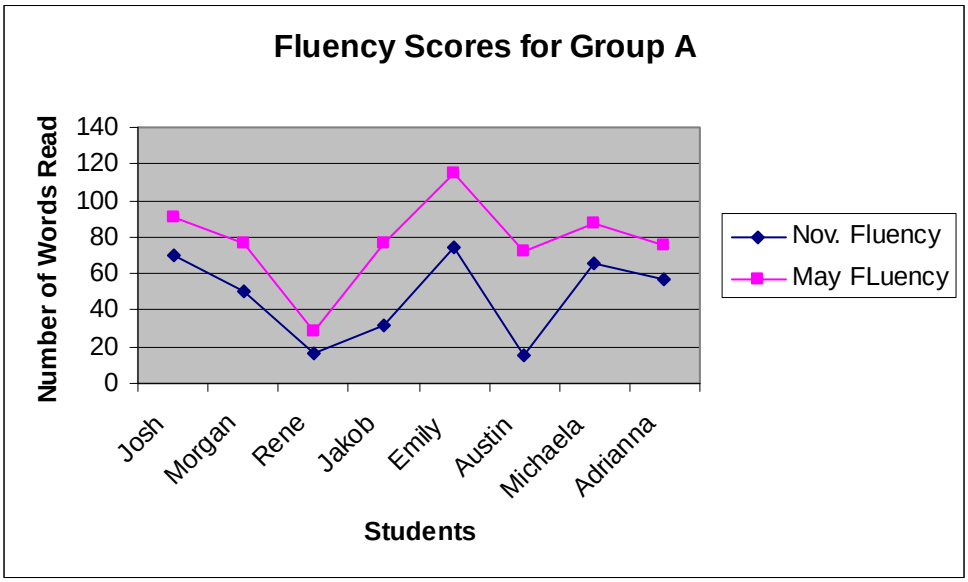


Figure 4.2 Control Group

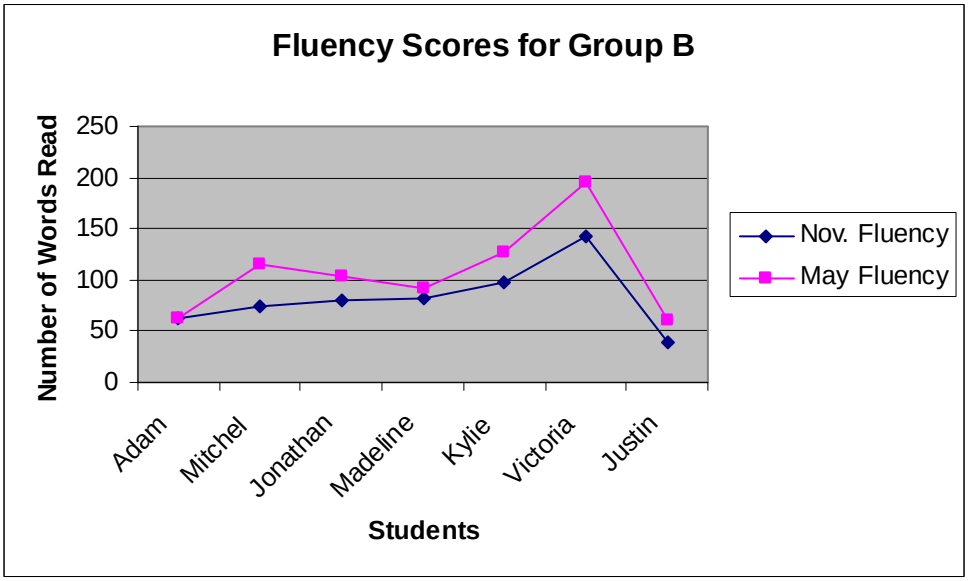
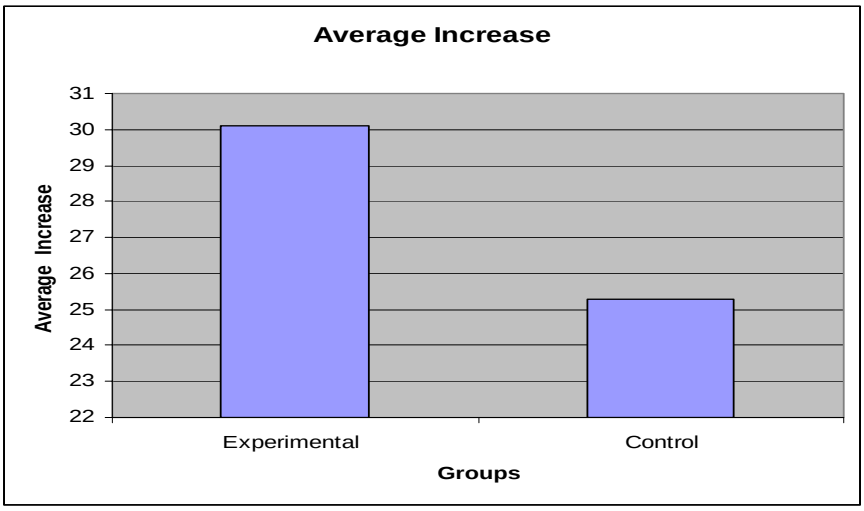


Figure 4.3



A t-test analysis of the data showed the t-value was 0.548 with 13 degrees of freedom. The p-value was 0.50. The confidence level for the mean scores was 95%. Group A succeeded their average score of 47.5 words read correct per minute in November by 30.5. In May, Group A had a score of 78 words per minute. Group B had an average score of 82.7 words read correctly per minute in November. Their final score in May was 108. Each group increased their scores during the period of the study. Group A fluency scores increased by 4.8 words per minute more than Group B scores.

CHAPTER V: SUMMARY AND CONCLUSIONS

Summary

The purpose of this study was to determine the effects of repeated oral reading on the reading fluency of first grade students. By examining the scores for both groups A and B, it was observed that all but one student increased their fluency scores within the allotted time for the study. The scores of the experimental group, according to the t-test, were not significantly higher than the scores of the control group; however their increase scores are much higher. It became obvious, after the study had started, that four fluent readers were placed in the control group and four low reading ability students placed in the experimental group. The two groups proved not to be as heterogeneous as planned. The results show that by allowing students multiple opportunities to read aloud, students were able to achieve a higher fluency score.

Conclusion

My beginning hypothesis is that students who are exposed to more opportunities to read a text aloud will achieve higher fluency scores than students that do not. However; the results show that students in Group A did not achieve scores higher than Group B. Instead, the students in Group A showed a larger increase in fluency scores when comparing the first month score to the final month score. It is pleasing to see the significant growth these students made. Both Groups A and B were determined early in the year, and it was later observed that the stronger, or more fluent, readers among the class had been placed in the control group (Group B), with

most of the developing readers in the experimental group or Group A. Therefore, my hypothesis did not show the result preferred. It did prove that students who read aloud a given text multiple times will improve their fluency rate. Students in Group A show more progress made than Group B. It is certain that without the repeated oral readings from developing readers, these students would not have made the progress shown from the results of the study. The practice of reading to a competent reader allows students to receive feedback from their reading and receive assistance when needed. The students enjoyed reading to the parent volunteers. Students felt more comfortable and favored reading to the parent volunteers than reading independently.

Recommendations

The practice of oral repeated reading improved fluency scores; however, there are disadvantages to using this method in a typical classroom setting. Finding the time for the individual oral reading and parent volunteers can be difficult. Much time was needed to allow for repeated readings on a weekly basis. Without the help from parent volunteers and paraprofessionals, this study would not have been as efficient. Because of the time and volunteer constraints involved, repeated oral reading would be best used for developing readers only.

The implementation of repeated oral reading was certainly a benefit to the classroom reading practice. Many students showed much improvement with their fluency and comprehension assessments. Because of the various forms of reading strategies being researched today, many students could benefit more by practicing them. Other strategies include: choral reading, reader's theatre, shared readings and

books on tape. These are efficient strategies that do not require as much instruction or individual attention from the teacher or parent volunteer.

The repeated oral reading strategy is perhaps most beneficial for use with those students who are developing readers and struggle with comprehension. Based upon the results of this study, the strategy is effective. When this method is used for those who need to improve fluency the most, successful reading can be achieved.

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APPENDIX A

Repeated Reading Procedures

1. Texts for fluency assessments are selected from the Scott Foresman Reading Series. All texts have been previously read by students prior to assessment.

2. Number of words in the selected text are counted and recorded by Paraprofessional, administers student assessments.

3. Students read text, timed for one minute, as the paraprofessional records miscues and incorrect reading of words on sheet of paper.

4. The total words read are calculated and errors are subtracted out to determine the number of words read correctly: Words Correct Per Minute (WCPM).

APPENDIX B

Repeated Reading Chart

Name:_____ **Goal: _____**

WORDS PER MINUTE

150			**150**			**150**			**150**		
145			**145**			**145**			**145**		
140			**140**			**140**			**140**		
135			**135**			**135**			**135**		
130			**130**			**130**			**130**		
125			**125**			**125**			**125**		
120			**120**			**120**			**120**		
115			**115**			**115**			**115**		
110			**110**			**110**			**110**		
105			**105**			**105**			**105**		
100			**100**			**100**			**100**		
95			**95**			**95**			**95**		
90			**90**			**90**			**90**		
85			**85**			**85**			**85**		
80			**80**			**80**			**80**		
75			**75**			**75**			**75**		
70			**70**			**70**			**70**		
65			**65**			**65**			**65**		
60			**60**			**60**			**60**		
55			**55**			**55**			**55**		
50			**50**			**50**			**50**		
45			**45**			**45**			**45**		
40			**40**			**40**			**40**		
35			**35**			**35**			**35**		
30			**30**			**30**			**30**		

DATE:

STORY:

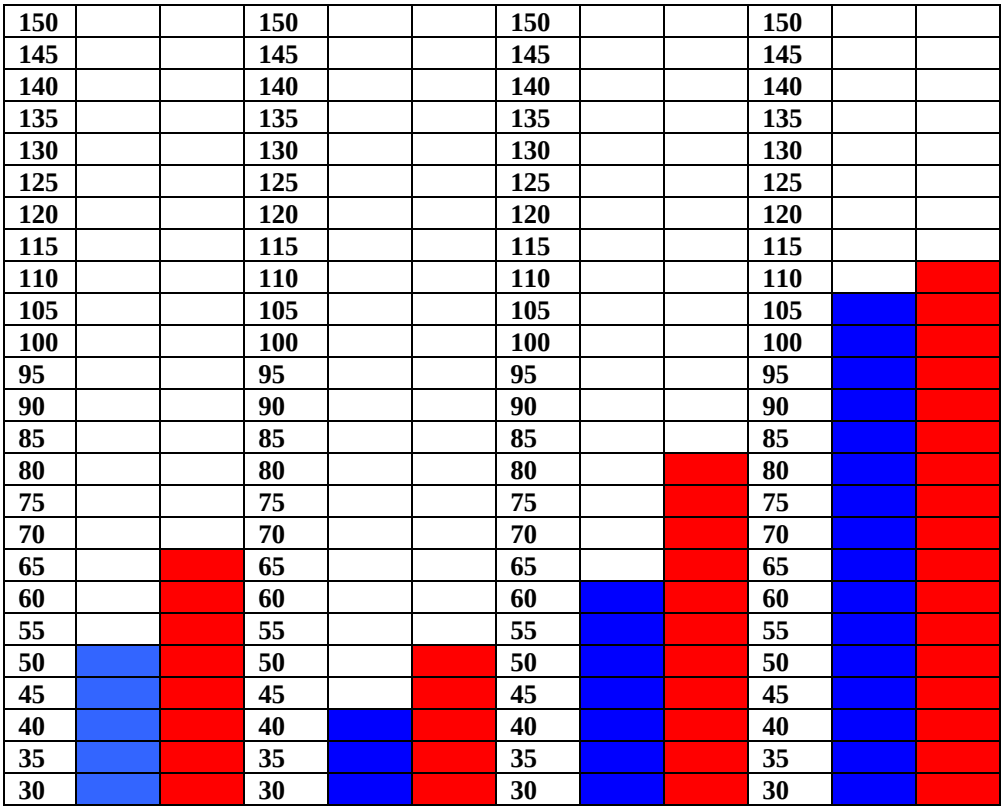
 # OF ERRORS:

APPENDIX C

Repeated Reading Chart

Name:___Student Sample____ **Goal:** _70 wpm____

WORDS PER MINUTE



DATE: 11-11-04 12-9-04 1-5-05 3-8-05

STORY: The Nap A Big Job The Big Mess Same As You

 # OF ERRORS:

0/0 1 (birds)/ 0 0/0 0/0